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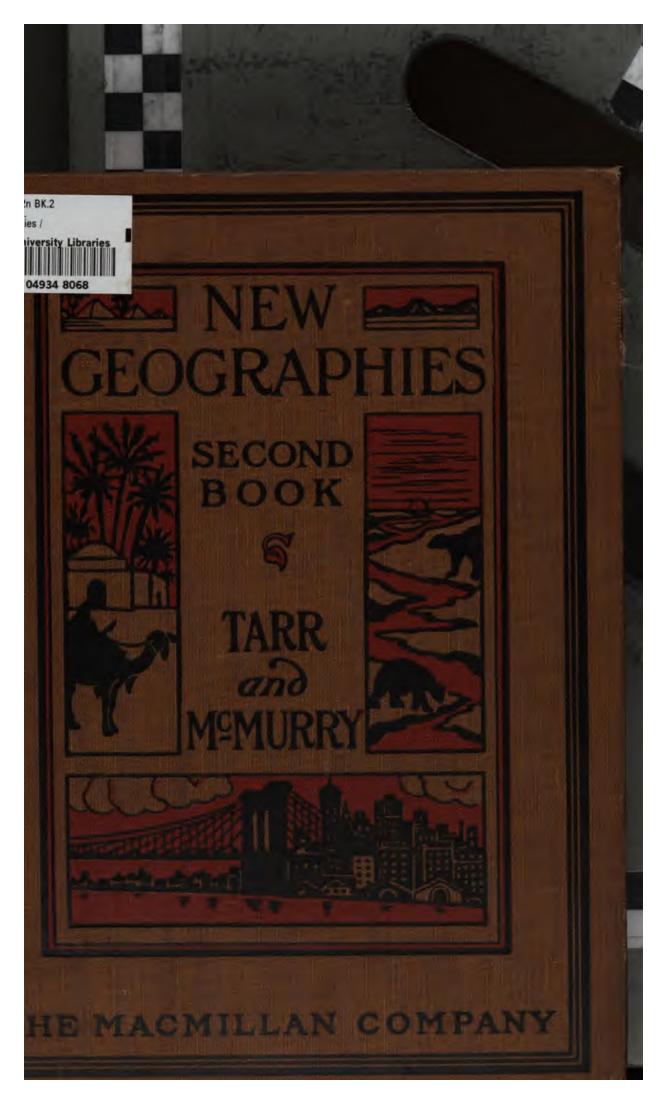
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DEPARTMENT OF EDUCATION LELAND STANFORD JUNIOR UNIVERSITY

NEW GEOGRAPHIES
SECOND BOOK



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NEW GEOGRAPHIES

SECOND BOOK

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WITH MANY COLORED MAPS AND NUMEROUS ILLUSTRATIONS
CHIEFLY PHOTOGRAPHS OF ACTUAL SCENES

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PREFACE

Place of General Geography in this Volume. — The most difficult part of common school geography is that dealing with the motions of the earth, latitude and longitude, winds, rainfall, ocean currents, and temperature. Yet these subjects are almost universally placed at the beginning of the advanced book, so that their treatment follows immediately upon Primary Geography. This arrangement requires children to move abruptly from a meager study of the simplest facts in geography to its broadest abstractions, which is thoroughly bad and unnecessary.

In this volume only two chapters at the beginning of the book precede the intensive treatment of the United States. The first is a physiographic history of the continent, showing how its principal mountain ranges and valleys came into existence; how its coal beds were formed; what were the effects of the great Ice Age; and what have been the more recent changes in the coast line, with their results. Then comes a chapter on the Plants, Animals, and Peoples of North America; and the two chapters occupy only 26 pages. Whatever further facts in regard to winds, rainfall, temperature, etc., are needed in the study of North America have been plainly stated, when wanted, just as other concrete facts have been. After our continent is finished, and a fair number of concrete data, bearing on these matters, has been presented, these are treated as general topics in some detail. By this arrangement, the study of these difficult subjects has been postponed at least one year, and so many of the facts that are necessary to their appreciation have been presented concretely that they are then approached somewhat inductively. The authors regard this as one of the most important among the distinguishing features of this volume.

The general principles in regard to industries, distribution of inhabitants, mutual relation of city and country, and dependence of various sections upon one another, form another subject which, contrary to custom, is treated in the middle and latter parts of the volume. One reason for this is that these broad truths approach abstractions in their nature, and are, consequently, too difficult to be earlier appreciated by children. They are, moreover, to a large extent, a summary of what has preceded, and, therefore, naturally come last when a more inductive approach is possible.

Prominence of Review and Comparison.

— A common defect in the teaching of geography is that pupils are allowed to forget about one country while studying the next; and the result is that, by the time Australia is reached, most of what has previously been learned about the United States, as well as other countries, has faded from memory. Yet the relation between North America and the

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other continents is so marked that this defect is quite unnecessary. ample, most of the industries and basal principles of physiography and climate have received the attention of a child when he has completed a general study of the United States. Foreign lands illustrate the same great ideas under different conditions. This means that the comprehension of foreign countries may best be gained by our children, if they use their previous knowledge of the United States as a basis of compari-If, then, this old related knowledge is carefully called to mind when the physiography, climate, and industries of a foreign land are approached, our pupils will not only secure a fuller appreciation of that region, but will also keep their knowledge of the United States fresh by bringing it into use.

The above has been a controlling idea in preparing this volume. Accordingly in approaching the physiography of South America (p. 236), the physiography and climate of Europe (pp. 257, 264), etc., the authors have reproduced the corresponding situations in our own country at some length. Besides this, they have included in the text scores of brief comparisons with the United States. By this means incidental reviews are continually provided, which are especially attractive to both teachers and pupils.

To supplement this kind of review several sets of questions, which call for still different comparisons with the United States, are included in the book, one series being found at the close of the treatment of each continent. These are likewise rich in motive, inasmuch as they recall leading facts in regard to the United States from varying points of view. It should be kept in mind, also, that each set at the same time reviews another continent from a new point of view.

Many of the facts in regard to the United States which these questions call for are not directly presented in the text which treats of the various continents, and answers for a few of them are not indicated in the maps. Also pupils may have forgotten some of the important information about the United States. For these reasons Section VII, covering 17 pages, is an organized review of North America alone. It includes the principal facts about our continent which every pupil should know on completing the grades.

The title of the last section, "Review of the United States and Comparisons with Other Countries," indicates provision for still further review. seemed to the authors an anticlimax to close several years' study of geography with the Islands of the Pacific, lands farthest away from us and of least in-On the other hand, it has terest to us. been deemed highly important that, after all the countries of the world have been treated, the closing chapter should summarize the situation and show the rank of our own land and its relation to This secures a final reconsideration of the principal facts in our geography, while at the same time it brings them into proper relation and perspective.

On the whole, the authors are of the opinion that reviews should occupy a large part of the time of instruction;

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and, by the plan followed, pupils will have a fairly complete knowledge of the United States and the rest of the world in their possession, not only when they finish the grades, but in years to follow.

Physiographic Basis and Causal Sequence. — The authors believe that rational geography must rest upon a physiographic foundation. Physiographic conditions most often furnish the reasons for the location of human industries, the development of transportation routes, the situation of cities, etc. In other words, when the physiographic facts about a given region are clearly grasped, most of the other geographic facts easily arrange themselves as links in a causal Thus the many details touching a certain locality are taught in relation with one another, so that they approach the form of a narrative, rather than that of a mere list of statements.

Physiography has, therefore, been introduced freely; but under two limitations. First, only such physical facts are included as are shown really to function in man's relation to the earth. Physiography that is clearly shown to have a real bearing upon man greatly enriches geography; it is the unused physical geography that is a stumbling block. Second, these physical facts are presented in connection with their use, not entirely apart from it and in a different part of the book.

Abundance of Detail.—The interest of a geography text, as of any other text, must depend in large measure upon the amount of detail included. One characteristic of this volume is that it deals with its subject in unusual detail. Particularly in the treatment of many

of the fundamental ideas of geography is this apparent. As was suggested in the Preface of the First Book, the basal units for the study of geography, although constantly in use, are seldom adequately presented in the text-books. plies strikingly, for example, to such topics as farm, cattle ranch, irrigation, lumber camp, and factory. In order to remedy this defect, as far as possible, each subject of such a kind is presented in these books with as much detail as space permits, and in connection with that section of country in which it seems most prominent.

For example, lumbering, fishing, and the manufacture of cloth, boots, and shoes receive their most detailed treatment in connection with New England; the mining of coal and iron ore and the manufacture of iron goods are discussed in connection with the Middle Atlantic States; and gold mining, irrigation, and grazing are naturally included under the Western States.

The industries and objects thus described, being fairly typical of industries and objects found elsewhere, are on that account worthy of being called *types*. Through the careful presentation of such types, vivid pictures and an appreciation on the part of the pupils are assured.

The study of the United States has, as suggested above, furnished occasion for detailed treatment of most geographic types. Some important features and occupations, however, are not found in the United States, but to these the authors have endeavored to give the same careful consideration. For instance, so far as space permits, the Brazilian forest is presented as a type of

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tropical forests (page 243). Other illustrations may be found in the treatment of the linen industry on page 270, and of the silk industry on page 286. The object is to continue to acquaint the learner properly with the basal units of geography, as well as to make geography interesting.

Organization of Subject-matter. — In advanced geography, perhaps even more than in the primary book, there is a tendency to offer subject-matter in the form of disconnected facts. The greater amount of detail in the more advanced volume no doubt makes it especially difficult to avoid such looseness of organ-The most flagrant example of this evil is the treatment of the United States by individual states, which we To be sure, there is a have discarded. call for a knowledge of our own country by states, and an endeavor has been made to meet it by several sets of questions which require a careful state re-But when the geography of the United States is presented primarily by states, the child is oppressed and confused by the great number of individual facts which have apparently the same Even an adult cannot easily escape a feeling of confusion on reading a few pages from a geography that divides the subject into such small units.

Where this particular defect is avoided, it is often difficult to distinguish the principal from the subordinate facts and to carry the outline of the whole easily in mind. The remedy must be found first, in the treatment of each country or other large subject under only a few headings; and second, in bringing to-

gether all details that bear upon a particular topic, and excluding all else. Thus, in the treatment of the Western States in this volume, farming by irrigation is only once extensively treated. A whole page is devoted to a discussion of the subject, including the manner in which irrigation is planned in the vicinity of Denver, its cost, and its influence on the value of land. These many details are associated as parts of one story; and as there are only a few such topics in the entire chapter on the Western States, it is not difficult to keep in mind the The use of the type leading points. idea elsewhere accomplishes the same purpose.

The frequent comparisons provided for at the close of the chapters likewise do much to preserve perspective, for they lift the more important thoughts into prominence while neglecting nonessentials. Similarly the two review chapters, one a Review and Comparison of our states, the other a Comparison of the United States with other countries, distinguish in a prominent way the leading from the minor facts. But, above all, throughout this volume the subjectmatter in each chapter is presented under so few headings that the learner is likely to be impressed with the simplicity of the situation. The authors, at least, cherish the hope that the pupil will see the outline clearly even in the midst of the necessary mass of details.

Probably the most important improvement of this volume over the former Tarr and McMurry "Advanced Geography" consists in its better organization. The marginal headings have been se-

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lected with great care; also a large amount of energy has been consumed in bringing into one place all the details that bear on a single question, and in rigidly excluding all irrelevant matter from among them.

Extent of Changes in this Revision.—In bringing the facts in this volume down to date, and in reorganizing them in the manner above indicated, approximately one half of the entire text has been rewritten, while much of the remainder has been modified to some extent. These changes, together with entirely new maps and many new illustrations, make the book a radical improvement over the original volume, while preserving any peculiar merits that that book may have possessed.

The increased quantity of subjectmatter made it necessary either to widen the old style page — of one column or to adopt a new form. Since the length of line in the former case would have been quite unjustifiable, it seemed best to follow the latter plan.

Maps, Illustrations, and Acknowledgments. — The maps for this volume have been entirely remade and their number increased. A feature of especial note is the introduction of a series of colored physical maps, so that each continent is represented by three maps — a political map, a relief map, and a physical map.

Many of the drawings of the old book, notably those made by Mr. C. W. Furlong, the well-known artist, are used again in this volume; we have also made use of some of the better half-tones in the old book. Many new illustrations are introduced, however, but

in no case merely for the sake of having something new; change has been made only when distinct improvement has been possible. The half-tones and other illustrations are introduced not merely as pictures, but as part of the fund of information offered; and it is expected that they will be studied in connection with the text which they illustrate, amplify, or explain.

We are indebted to Mr. Philip Emerson of the Cobbett School, Lynn, Massachusetts, and to Professor R. H. Whitbeck of the University of Wisconsin, for assistance in the preparation of the original volume as acknowledged in its preface, and Professor Whitbeck has given further aid in this revision, especially in the selection of illustrations. Valuable assistance in preparation of statistics and lists of books of reference has been rendered by Mr. Irvine Perrine and Miss Kathryn Kyser of Cornell University. Naturally we are indebted to many sources for the material making up the text in this volume, but among them Mills' "International Geography," "The Statesman's Year Book," The United States Census Report, and Ratzel's "History of Mankind" call for special mention.

As for illustrations, aside from those made by Mr. Furlong, already acknowledged, we are especially indebted to William Rau of Philadelphia, from whose extensive collection of photographs we have selected a large proportion of the photographs from which our half-tones are made. To other photographers whose pictures we have used—a list far too large to incorporate here—and to other sources acknowledged in the

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we are also indebted. Special men- in giving us permission to reproduce tion should be made of the assistance rendered by the Philadelphia Com- maps were made by E. E. Howell of mercial Museum in supplying us with Washington.

preface of the "Complete Geography" | a series of world product maps, and some of their photographs. The relief

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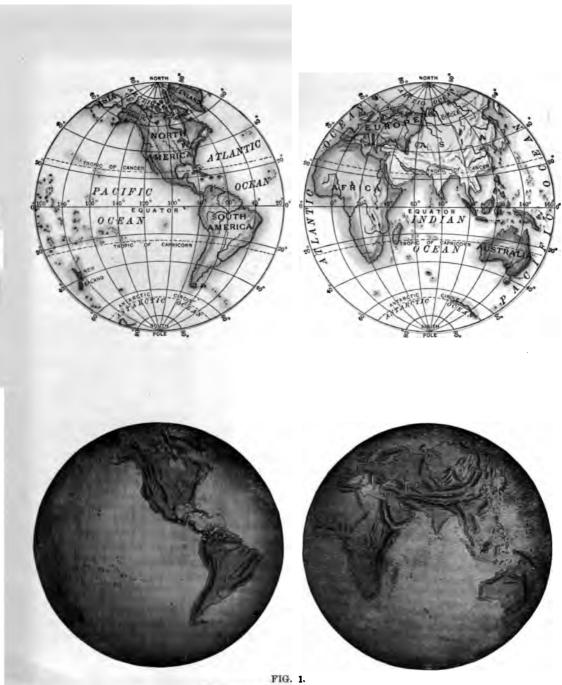
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The Eastern and Western Hemispheres.

FIG. 2



PART I. NORTH AMERICA

I. THE STORY OF OUR CONTINENT

THERE are a hundred and twenty-five million persons in North America at the presOur continent ent time, although a century ago there were scarcely one it now is tenth of that number. This wonderful growth has been largely due to the valuable mineral products of the earth;

to the soil and climate, which have allowed the forests and the many different kinds of plants and animals to thrive; and to the rivers, waterfalls, lakes, and harbors, which have made manufacturing and shipping easy.

Yet these valuable things were not always here, as we now find them. Each has had a long history. For, as it takes time to build a house, and to prepare the boards from trees, the nails from iron ore, and the bricks from clay, so it takes time for the formation of minerals and

rocks, and for the building of a continent. In fact, millions of years have been required for all that work.

The story of the growth of North America has been learned by a careful study of the rocks; and, although many questions may be asked that no man is yet able to answer, we are prepared to tell a part of that story.

At one time the earth was probably a

white-hot sphere, like the sun, but in time the outside cooled to a crust of solid rock. The interior, still heated, continued to shrink and grow smaller, as most substances do when cooling. This caused the solid crust to settle and wrinkle, much as the skin of an apple wrinkles when the fruit is drying. Water collected in the lower portions, making the



Fig. 3.— A part of the relief map of North America showing the West Indian chain of mountains rising from the bed of the sea.

oceans, while the higher portions formed dry land. Thus North America and the other continents were born.

In its early history the central part of the continent was still a broad sea, but the eastern and western parts Its early doubtless resembled the West history Indies of to-day, which you will find on the map of North America (Fig. 10). Those islands are the highest parts of a great mountain chain. They seem to be separated

merely because the ridges upon which they rest do not extend above the water (Fig. 3).



Fig. 4. — Trunks of trees, in the solid rock, standing where they grew when these rocks were being deposited as sediment in the Coal Period.

Although in early times North America consisted of mountain crests that formed chains of islands, many changes Its later life In the course of followed. ages, the mountains rose higher, forming a continuous range in the East, and several ranges in the West. Then the plains between the mountains were slowly raised above the ocean, and a large part of the continent came into view.

Ages after the beginning, a period arrived when the climate was much warmer in the The Coal Period northern part of North America than now, and the rains were far heavier. During that period our coal was formed out of the remains of plants.

There is a good proof that the coal used in our stoves and furnaces is made of 1. What coal plant remains. is made of. with proof Roots of plants may still be seen in the old soil, now changed to rock, that lies beneath the coal beds; and stems of plants, and even trunks of trees (Fig. 4)

changed to coal, are found in the coal beds.

even with the naked eye, one can see that coal is made of bits of plants pressed closely together. Sometimes the full form of a fern or leaf, called a fossil, may be seen (Fig. 5).

As the crust of the earth slowly shrank and wrinkled, the land was raised and Even now it is 2. How coal lowered. slowly moving in some places, beds were and it was doing the same dur- formed ing the Coal Period. At that time parts of the old sea bottom were raised above the water, forming extensive plains in the eastern part of North America. Those plains were so low and level that vast swamps were produced (Fig. 6), on which a rank vegetation grew, as in a tropical jungle.

The swamps were, no doubt, somewhat like those which may now be seen in many parts of the earth. Possibly the vegetation grew far more thickly than now, perhaps even more thickly than it now grows in the forests of the Amazon or the everglades of The plants of the Coal Period Florida. were different from those of the present (Fig. 7); indeed, none of the many kinds of trees that we now know grew in those ancient forests.



Fig. 5. — The print of a fern in a rock that was formed during the

After the plants had grown in those Besides, with a microscope, or at times | swamps for hundreds of years, the plains sank beneath the sea, and layers of mud, sand, and gravel collected over them. These have since been hardened into layers of rock, and the vegetation beneath them has | ing it. If it could then have been dug up

been changed into coal. After another long period the sea bottom was raised once more, and dense swamp vegetation again grew; but these plants had their roots in the ocean mud that had buried the earlier swamp. After many more years the plains again sank, and the swamp vegetation was covered over, as before. This rising and sinking of the land continued for ages, one set of layers of mud, sand, gravel, and vegetation being covered up by another, until many such sets

were formed, producing many beds of coal.

The vegetation gathered in some of the swamps to a depth of many feet; but, when this was covered by the layers of mud, sand, and gravel, it was pressed more tightly together. As the number of these layers increased, the pressure became very great, and thus the vegetable matter was pressed so closely together that it made These are usually only two beds of coal.



Fig. 7. — Trees of the present day in a swamp in Arkansas. Notice how very different these trees are from those in the swamp of the Coal Period (Fig. 6).

or three feet thick, but some are as much | is called soft, or bituminous, coal. as ten or fifteen feet in thickness.

water, making a woody matting which did not fully decay, because the 3. The different water prevented air from reach- kinds of coal



Fig. 6.— A view showing how the forests of the Coal Period probably looked.

and dried, it would have made good fuel. Indeed, in Ireland, Norway, and other cool, moist lands, it is now the custom to dig such woody matter out of the swamps and dry it for burning (Fig. 8). Such fuel, called peat, is much used for cooking and heating. Some of the poorer coals, known . as lignite, are little more than peat beds partly changed to mineral coal.

Other beds, having far more pressure upon them, have been changed to harder

> One kind of coal, coal. called anthracite, found in the mountains of Pennsylvania, has been so greatly changed that it is as hard as some rocks, and is known as hard coal. most of the coal, like that of western Pennsylvania and the Central States, - although a real mineral, and harder than lignite, - is not so hard as anthracite. This

All this time, and at other periods during When the plants died, they fell into the | the formation of the continent, iron, copper,

The deposit of other minerals gold, silver, building stones, and other mineral substances that we use every day, were also slowly being made. Many of them, such as gold, silver, and copper ores, were deposited in cracks in the mountain rock. They were brought and left there by hot water, forming what are called mineral veins. Iron ore also has been deposited in beds and veins, though not always by hot water.



Fig. 8.—A scene in Ireland, showing the digging of peat from the bogs. It comes out of the bog wet, and is then wheeled away and spread out in the sun to dry.

During the millions of years that the con-Other great tinent was slowly growing, changes mountain systems and plateaus

1. Formation of mountains and plateaus were forming in both the East and the West. These were

(1) Appalachian Mountains and surrounding

Caused by the shrinking and wrinkling of the earth's crust.

They were to have a great in-

plateaus fluence upon our climate, and therefore upon our crops, our animals, and ourselves.

The eastern mountains, called the Appalachians (Fig. 10), were raised above the sea in early ages. Since then they have been slowly worn away by weather and

water, and thus lowered so that they are now neither very high nor very rugged. Still, they have some peaks which reach more than a mile above sea level.

It should be understood, however, that it is not a mile from the base to the summit of such mountains; for mountains usually rest upon a platform, or table-land. The table-land, or plateau, upon which the Appalachians rest, for instance, is over a quarter of a mile above sea level. When we say that the mountains are a mile high, therefore, we mean that

their summit is a mile above the level of the ocean, which may be many miles from the mountain base.

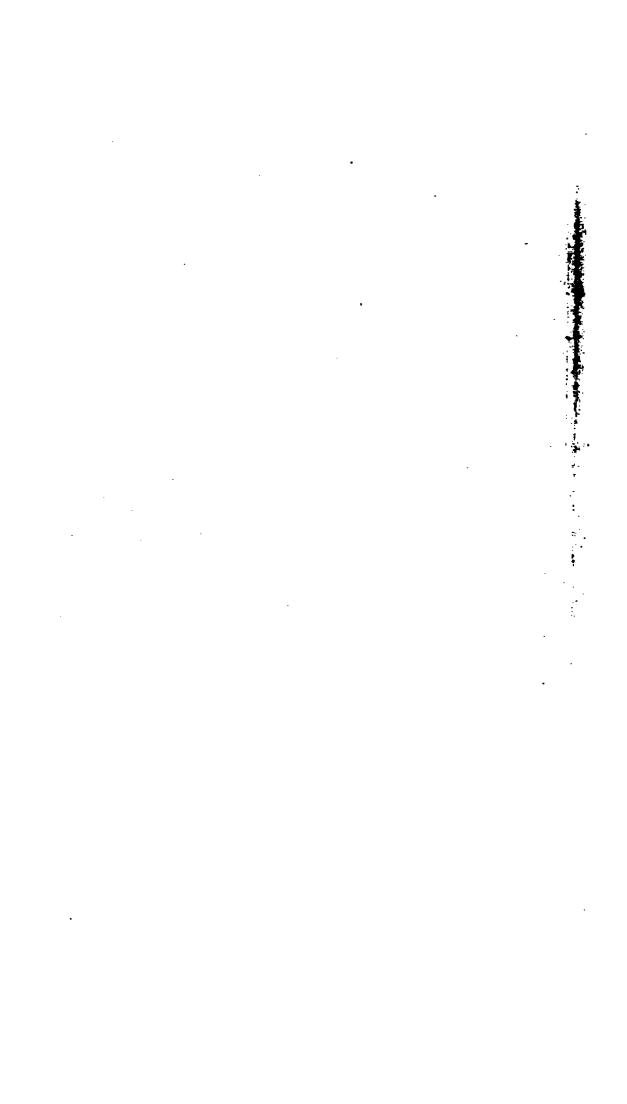
The western mountains, or Cordillera, are younger and therefore less (2) The Corworn down than dillera and the Appalachi- surrounding ans. For this reason they are much more rugged, with many deep canyons and lofty peaks, some of which rise three miles and more above sea level. This includes the broad plateau at their base, which itself is more than a mile in height, or as high as the mountain peaks of the East. Some of these mountains are still growing, and now and then an earthquake is caused as the mountain rocks snap

and move under the great strain.

While the Appalachians and Cordillera have been caused by the shrinking and wrinkling of the earth's crust, hundreds of mountain peaks in the West have been formed in a (3) Volcanoes different way. They are called volcanoes, and are built of molten rock, or lava, that has been forced to the surface from within the earth. Though no longer active, these peaks are known to be volcanoes because of their cone shape; the hollows, or craters, in their tops; and the lava and volcanic ash, or blown-up lava, of which they are made.

Hundreds of thousands of square miles of the western part of the United States are covered by lava. Much of the soil produced by the decay of the lava is very fertile, and that is one of the chief reasons why the central and eastern part of the state of

• • .



THE STORY OF OUR CONTINENT



Fig. 11. - Relief map of North America.

Washington, which is largely covered with such a soil, has become noted for wheat.

From the mountain systems of the East

2. Formation of the trough between the Appalachians and the
Cordillera

mountain systems of the East
and West, the land slopes
gently toward the Mississippi
River (Fig. 14). These slopes
form a kind of trough, through

the lowest part of which this river flow It was by the uplift of the mountains on i two sides that this broad trough was forme Measure its width on the map of the Unit States (Fig. 41).

Like the mountains, this extensive loland, called the plains of the Mississip

Valley (Fig. 15), has had a long history. In the early ages so much of it was under water that a sea extended from (1) Its earlier history what is now the Gulf of Mexico, all the way to the Arctic Ocean. In the



Fig. 12.- A view in the Western Cordillera showing the rugged mountains of that region.

rock layers that lie beneath the soil of the lowland are found many remains, or fossils (Fig. 16), of shells, corals, and fish that lived in this ancient sea. Upon dying and dropping to the bottom, these animals were

buried in the beds of sand, clay, and gravel that have since been hardened into rock.

After a time most of this ancient sea bottom was raised to form dry land, (2) How it although a part reached its present form of it - from the Gulf of Mexico to the southern part of Illinois — remained under water for a long time afterward. Into this sea the Mississippi discharged floods, and dropped its load of sediment, swept from the plains and distant mountains.

As time went on, the river sediment entirely filled up this sea, and formed deltas and flood plains which — raised by a slight uplift—are among the most fertile lands of our country. And now the river seems

> bent on filling up the Gulf of Mexico itself. Already it has built its delta far out into the Gulf, as you can see.

One might not at first think that it made much difference how the mountains and low-portance of this arrangeto be placed dur- ment of mouning the formation of our continent; tains and lowlands

but it is, in fact, a matter of the greatest importance.

The Mississippi Valley has become the home of many millions of people; and the climate in which they live, together with the crops that they raise, depend in large part on the direction and height of the mountain systems.

The Cordilleran Highland, for instance, has a great influence on the rainfall in this valley. In all but the southern part of the Mississippi Valley, the winds blow much more often from the west than from any other



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Fig. 13. - Mount Rainier, in Washington, one of the volcanic cones of the West.

direction. Coming from the Pacific Ocean, | carry their warmth and moisture so far well laden with moisture, these winds are north. Neither could the cold north winds forced to drop more and more of it as they | reach so far south. Perhaps you can tell



Fig. 14. — A section across the central part of the United States to show the relief and the principal slopes.

pass over one lofty mountain range after another. When they finally descend east of the Rocky Mountains, therefore, they have little dampness left. This leaves the

plains and plateaus of the Northwest dry, or arid.

The Appalachians, being much lower, allow winds to carry more moisture over them. Since there are no mountains on the south, winds from that direction can bring in vapor freely. Winds do, now and then,

blow from the Atlantic and from the Gulf of Mexico, and for that reason the eastern, central, and southern portions of the great valley are well watered.

some of the changes that would follow if there were such mountains.

Long after the coal beds were formed, and the great highlands and valleys were



Fig. 15. - A wheat farm on the level plain of central United States.

made, there came another very important event in the preparation of The Great this continent for our home. Ice Age It became far colder than it 1. The vast

now is, just as dur- sheet of ice, ing the Coal Period or glacier the climate was much warmer. Indeed, it became so cold that a sheet of ice, or glacier, was formed, so great that it covered a large part of northern North America. No one is able to say why it came, or why it went away; but all who have studied the subject are certain that it was here, and that it remained even thousands of years before melting away.

An ice sheet similar to that ancient one may still be seen in Greenland (Fig. 2. A similar 17). Except along glacier now in the very coast, the Greenland

island of Greenland is now immense buried beneath a glacier which is as large as fifteen states the size of New York



Fro. 16.—Shells or fossils in the rock that was deposited in the ancient sea that once covered central United States.

How different the climate would be if a lofty system of mountains extended east and west across the Mississippi Valley! Then the warm south winds could not | State.

The Greenland glacier has been made | of snow that has fallen in immense quantities on the high interior. You know that you can change a snowball into ice by pressing it in your hands. In a similar |

way, the pressure of the great mass of snow in Greenland has changed the lower layers into As the snow collects and ice. becomes ice, it spreads out, or flows, from the interior toward the coast, much as a piece of wax may spread if a weight is placed upon it. Moving toward the sea, this glacier drags away the soil, tears off fragments of the rock, and scours the rock layers, as if it were a mighty sandpaper. The movement is very slow, yet the ice is always pushing onward to the sea, where enormous icebergs

are constantly breaking off and floating away (Fig. 17).

8. Extent of the Great Glacier

The glacier which formerly spread over a part of our consnow that had changed to ice. It covered most of the northeastern part of North America, reaching as far south as New York City and the Ohio River; but as you can see from the map (Fig. 18),



Fig. 17. — A view of a part of the great ice sheet that covers Greenland. Here it reaches the sea and discharges huge icebergs into it.

it did not reach as far south in the Northwest.

Being over a mile deep in its thickest part, and therefore very heavy, 4. Changes that tinent was likewise made of | the glacier swept away the soil the glacier made



Model by E. E. Horoell.

Fig. 18. - A map to show the extent of the Great Ice Sheet in the United States during the Great Ice Age.

that covered the land. Not only did it do this, but, by the help of rock fragments held fast in its bottom, it scraped off pieces of the solid rock and carried them forward. As it slowly moved over the surface, it also ground bowlders and pebbles together, and

rubbed them against the solid rock, scratching and grooving it (Fig. 19). Scratches thus made may still be seen pointing northward, toward the place from which the glacier moved.

The rock and soil that the glacier carried along were finally left in various places. Great heaps

of clay and gravel, called moraines (Fig. 20), were deposited along the outer margin, where the ice melted because of the warmer climate there. The moraine hills, or hummocks, are sometimes one or two hundred feet high.

After standing for a while, and building a moraine in one place, the glacier front

sometimes advanced to the south, or perhaps melted away toward the north; and each time that it halted it built up new moraines along its front. During the thousands of years that the Great Ice



Fig. 19. - Grooves on the rock, made by the Great

Ice Sheet as it dragged bowlders along with it.

Fig. 20. — Hills of gravel left by the Great Ice Sheet where its front stood for a while.

Sheet lasted, it carried millions of tons of clay and rock from one place to another, and built many low moraine hills.

The work of rasping, digging, carrying, and dumping which was done by the glacier has caused it to be likened to a combined file, plow, and dump cart of enormous size.

It was this glacier which caused the great number of lakes and ponds in the northeastern part of North America. Minnesota alone is glacier's work said to have ten thousand, (1) Upon our and in New England also lakes

there are many thousands (Figs. 21 and 88). Most of the states outside of the region covered by the ice sheet have very few lakes.

The manner in which these lakes were formed is as follows: The load of clay and bowlders, or *drift*, as it is called, was not dumped evenly over the land. There

were hollows and ridges left, and after the ice melted, water filled the hollows, forming ponds and lakes. In other cases the drift partly filled valleys and thus built dams, behind which ponds and lakes collected. Still a third way in which lake basins were formed, was by the glacier digging, or plowing, directly into the rock.

Even our Great Lakes did not exist before the coming of the glacier. Their basins occupy broad

river valleys which have been blocked by dams of drift, and deepened by the plowing of the Great Ice Sheet.

The glacier had an important influence upon our manufacturing, also. The deposit of drift in valleys

often so filled them that, after (2) Upon our the ice was gone, the streams manufacturing were forced to seek new courses. These courses sometimes lay down steep slopes, or across buried ledges, over which the water now tumbles in many rapids and falls (Fig. 22). Even the great cataract of Niagara.



Fig. 21.—Lake Winnipesaukee, in New Hampshire, one of the many lakes of New England caused by the deposits made by the Great Ice Sheet.

(Fig. 68) was caused in this way, and the | many lakes act as storehouses to keep the same is true of many of the falls and rapids | noisy falls and rapids well supplied with of hilly New England and New York. The water. In this way New England and New

York came to have the abundant water power which has helped to make them important manufacturing centers. In sections of our country not reached by the glacier, rapids and falls are much less common. Did the glacier cover the land on which you live? (See Fig. 18.)

A third important influence of the glacier was upon the soil, and there- (3) Upon our fore upon our farming farming. In most parts of the country the soil has been made by the decay of rock; but in the region which the glacier covered, the decayed rock was swept away, and drift brought by the glacier was left in its place. This soil was made by the grinding of rocks together, much as flour is made by grinding wheat; in fact, glacier soil is sometimes called rock flour. In some places the layer of



Fig. 22. - Enfield Falls, near Ithaca, New York. One of the many waterfalls caused by the Great Ice Sheet.

drift that the glacier left is several hundred feet deep.

The bits of ground-up rock left by the glacier have had an important effect upon the soil. Since they were gathered from many places, and from many

different kinds of rock, they sometimes cause a fertile soil in places where the decay of the rocks would naturally have formed a sterile soil. The constant rusting, or decaying, of these rock fragments is also of use in keeping the soil supplied with plant food.

On the other hand, in some places the glacier failed to grind the rock into tiny bits. Instead of that, it left many pebbles, and even large bowlders, to cover the ground and hinder the farmer (Fig. 23). In other places, the great quantities of water supplied by the melting ice washed away much of the rock flour. This left extensive sand and gravel plains that are by no means fertile.

become evident. For instance, the land along the coast of New Jersey is sinking at the rate of about two feet a century, while that around Hudson Bay is rising.

Some of the recent changes in the level



Fig. 23.—A view in New England where the glacier left great numbers of bowlders in the soil, from which these stone walls have been made.

In studying about the Mississippi Valley and the formation of coal, we saw that the Formation of sea bottom, and even the dry the coast line land, are not fixed and always the same. On the contrary, they often slowly rise or sink.

of the land have had an important effect. This is shown on our northeastern coast, where the land sinking of our
has recently sunk several hunnorthern coast
dred feet. By this sinking the ocean water
has been allowed to enter the valleys, leaving



Fig. 24.— A view in the harbor of Sitka, Alaska. Here the land has been lowered, and only the tops of the hills rise above the water, forming many islands.

Such changes in the level of the land are even now in progress in many places, though the process is so slow that usually years, and even centuries, must pass before the changes

the higher land to form peninsulas, capes, and islands, while the valleys have become harbors, bays, and straits (Fig. 45).

The peninsulas of Labrador and Nova Scotia, and the hundreds of islands along

the northeastern coast, including Newfoundland, have been formed by this sinking of the land. The irregular Pacific coast, from Puget Sound northward (Fig. 24), was caused in the same way.

Many good harbors were made by this sinking of the land, the best being where rivers enter the sea. When the land was higher, the streams carved out broad valleys; but as the land sank, the sea entered, forming extensive bays and fine harbors. In this way the Gulf of St. Lawrence was formed; also New York, Delaware, Chesapeake, and San Francisco bays, as



Fig. 25.—A view on the level coastal plain—once a sea bottom—which borders the coast south of New York.

well as many excellent harbors on the east and west coasts. What rivers carved out the bays mentioned? (See Figs. 41 and 219).

One reason for so few good harbors along the coast of the Southern States is that the states of land in that section has been rising of our rising. Just off the coast is a broad ocean bottom plain, called the continental shelf, where the water is shallow (Figs. 11 and 95). If the continental shelf were raised, it would form a plain.

That part of the Southern States which borders the Gulf of Mexico and the Atlantic Ocean was once a portion of this continental shelf, but it has been raised until it is now a low plain (Fig. 25). The continental

shelf is so level that when a part of it was lifted above the water there were few places for deep inlets, bays, and harbors. After the plain was raised, however, the coast was slightly lowered; but the bays thus formed are still shallow, and most of the harbors poor. The Florida peninsula is also a seabottom that has been slightly lifted above the ocean.

After changing during millions of years, owing to the rising and sinking of the land, North America is now third in Present size, size among the six continents shape, and of the earth. Which are Position of

larger? Which our continent are smaller? (See Appendix, p. 424.) The continent has the form of a triangle, with the broadest portion in the north. Draw the triangle. Compare its shape with that of South America (Fig. 1). Of Africa (Fig. 1).

The northern part is so wide that Alaska extends to within fifty miles of Asia, a distance so short that the early ancestors of our Indians and Eskimos probably first reached North America by

that route. Labrador, the part of the continent that extends farthest east, is over two thousand miles from Europe. On account of the great distance across the Atlantic, Europeans for a long time knew nothing of North America. It is certain, however, that the Norsemen from Scandinavia visited our shores nearly five hundred years before Columbus discovered the continent.

Most of the inhabitants of North America live far to the south of Alaska and Labrador, and here the oceans are Importance of much broader. Thus the in- this position habited portion of the continent is a long distance from Europe on the east, and a still greater distance from Asia on the west. This wide separation from other continents

has had great influence upon the development of the people of North America. It helps to explain, for instance, why the Spanish colonies were able to win their independence from Spain, and the United States their independence from England; for the distance across the sea was too great to send large armies, and the supplies necessary for their support.

Our distance from other continents helps also to explain the growth of our industries. At first the colonies imported even bricks, doors, and timber from Europe. But it proved so troublesome and expensive to carry such goods so far, that our settlers soon learned to produce for themselves most of the articles they needed.

Now that men have learned the use of steam, the distance from other countries is not so serious a drawback. Sailing vessels were very slow, and always at the mercy of winds and storms. Steamships, on the other hand, are easily controlled, and may go as far in one day as the old-fashioned sailing vessels traveled in a week. the use of steam, therefore, immigrants from Europe have found their way here by millions; and trade with the countries of Europe, South America, Asia, and other parts of the world has rapidly developed. Steam has made the ocean an excellent highway for reaching distant points. our separation from other continents has helped in many ways to make us independent, without bringing serious disadvantages.

1. How has the story of the growth of our continent been learned? 2. Describe the birth and early history of the continent. 3. From what is coal made? Give proof.
4. How have the coal beds been formed? 5. Name the different kinds of coal and give reasons for the difference. 6. What about the making of other minerals? 7. How were the mountains and plateaus formed? 8. What can you tell about the formation of the Appalachian Mountains and surrounding plateaus? 9. About the formation of the Cordillera and surrounding plateaus? 10. How were the volcanoes formed? State other facts about them. 11. How was the

trough formed between the Appalachians and the Cordillera? 12. Show how this arrangement of mountains and lowlands is of great importance.

13. Describe the glacier now found in Greenland.

14. What was the extent of the Great Ice Sheet on our continent? 15. What changes did it make?

16. What were the effects of the glacier's work upon our lakes? 17. Upon our manufacturing? 18. Upon our farming? 19. What have been some of the effects of the sinking of our northern coast?

20. Of the rising of our southern coast? 21. What is the present size, shape, and position of our continent? 22. Explain the importance of this position.

1. Make a collection of different kinds of coal.
2. Examine some pieces of soft coal closely, to see if you can discover plant remains.
3. Obtain some peat. 4. Examine layers of rock in your neighborhood, to see if they contain fossils. 5. Make a drawing similar to Figure 14. 6. Make a model of a volcano out of sand or clay. 7. What becomes of the Greenland icebergs?
8. Make a sketch map showing the extent of the Great American Ice Sheet. 9. What signs of the glacier, if any, can you find in your neighborhood?
10. Draw an outline map of the northeastern coast, and another of the southern coast, to see how they differ. 11. How many days long is the voyage, on a fast steamer, from New York to Liverpool? How many miles is the distance?

II. PLANTS, ANIMALS, AND PEOPLES OF NORTH AMERICA

1. Plants and Animals

One of the most important things to know about a region is its climate, that is, its temperature and rainfall. Influence of Where these are favorable, climate on plants usually flourish; and plants and since plants furnish food to animals animals animal life thrives wherever vegetation is abundant. Because North America extends far north and south, and has lofty mountain ranges and inclosed plateaus, it has many different kinds of climate. Therefore it has a great variety of plant and animal life.

The northern part of our continent is bitterly cold; and over a vast area the soil is always frozen, except at the plants of the very surface, where it thaws Far North out for a few weeks in summer. On se-

count of the frost, trees, such as we know, cannot grow there, for their roots are unable to push through the frozen ground and find the necessary plant food. There are some willows, birches, and a few other woody plants; but instead of growing to a good height, as our willows and birches do, these creep along the surface like vines, and rise but a few inches above the ground. Only by hugging the earth can they find protection beneath the snow, and thus escape the fierce blasts of winter.

A few grasses and small flowering plants grow rapidly, produce flowers, even close by the edge of snow banks (Fig. 26), and then die, all within the few short weeks of summer. Some of these plants develop berries, which, after ripening, are preserved by the snows, so that when the birds arrive in the spring, they find food ready for them.

The growth of insects in summer is Animals of the rapid, Far North like the 1. Insects growth of plants. As the snow melts, and the

soil thaws at the surface, the ground becomes wet and swampy, and millions of insects appear. Among them the most common is, perhaps, the mosquito. There are few parts of the world where this creature is a worse pest than on the barrens, or tundras, as these treeless, frozen lands of northern North America, Europe, and Asia, are called.

Few large land animals thrive in so cold a climate, where there is such a scarcity of s. Larger aniplant food; and the coldmals on land blooded animals, or reptiles, cannot live there. The reindeer, or caribou, the musk-ox, and polar bear are the

largest four-footed land animals (Fig. 27); and the crow, sparrow, and ptarmigan are the most common land birds.

The plumage of the ptarmigan changes to white in winter, and other animals, such as the fox, polar bear, baby seal, and hare, are also white. This helps them, in that 3. Color proland of snow and ice, to hide from tection, and food of these colors.

feeds upon birds and other animal food, and the polar bear lives mainly by hunting the seal. His white fur makes him almost invisible, and he steals noiselessly

prey unawares. The small white fox

upon his prey, asleep upon the ice; or, he patiently watches until his victim swims within reach, and then seizes him with his powerful claws (Fig. 314).

The other land animals live upon plants, such as berries, grass, and moss. The caribou eats the plant called "reindeer moss," which grows upon the rocks. If it were not for this, he would be unable to live through the long winter. To find this moss and other plants, he often has to scrape away the snow which covers the ground.

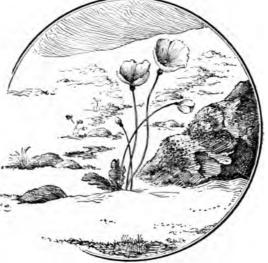


Fig. 26.—An Arctic poppy in blossom, although growing on the edge of a snow bank.

Many more animals have their

homes in the sea than upon the land, because there, except at the very surface, the temperature never goes below the freezing point. Therefore there are plenty of sea animals of all sizes, from those so small that they cannot be seen without a microscope, to the whale, the largest of all animals.

Sea birds exist by tens of thousands, building their nests upon the rocky cliffs (Fig. 27). Indeed, they are so numerous that, when suddenly frightened by the firing of a gun, they rise in a dense cloud that hides the sun; and with their cries they produce a din that is almost deafening.



Fig. 27. - Some of the birds and four-footed animals of the Far North.



- Walrus on the ice that is ever present in the Arctic Ocean.

Seals (Fig. 225) and walruses (Fig. 28) live in the water, the former being so valuable for their oil and skins, that men go on long voyages to obtain them. The oil comes from a layer of fat, or "blubber," just beneath the skin, that serves to keep out the cold. The seal is the most common of the larger Arctic sea animals, and is the principal food of the Eskimo, as well as of the polar bear.

During the winter the surface of the sea freezes over. Then many of the animals of the Far North

5. Migration southward in winter

migrate southward. Even the huge walrus (Fig. 28) moves clumsily toward a warmer climate. The birds go farthest, especially the geese, ducks, and gulls, which fly to Labrador, New England, North Carolina, and even farther south.

A large area in the western part of the United States and in Mexico has a very

Plants and animals of the temperate zone 1. In the arid

West (1) Plants of this region

slight rainfall, although the temperature is agreeable. This arid area includes most of the territory in which the rainfall is twenty inches or less during one year (Fig. 303). some places, as near the Pacific coast and upon the high

plateaus and mountain tops, there is rain enough for forests; but in most parts of the Far West the climate is so dry that there are no trees whatsoever. Indeed, some portions are true deserts.

One common plant in the arid lands is the bunch grass, so called because it grows in little tufts, or bunches, having a dozen or more blades. The sagebrush (Fig. 29), a plant with a pale green leaf, named because of its sagelike odor, is found throughout most of this arid region. Other common plants are the mesquite; the century plant, with its sharp-pointed leaves; and the cactus, with its numerous thorns.

On account of the dry climate, these plants have a severe struggle to live, and they protect themselves

in peculiar ways. For example, the cactus, unlike most plants, has no (2) How these true leaves. Thus it exposes little to live surface to the air for evaporation.

In its great, fleshy stem, it stores water for use through the long, dry seasons, while its needle-like spines protect it from animals in search of food.

The mesquite also protects itself by spines, and, in addition, it has such large roots that the part of the plant underground is often greater than that above. The roots of this plant furnish much wood for fuel. Some of these plants, like the sagebrush, have such



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Fig. 29. - A view in the desert of Southern California The low plants are sagebrush; the higher ones, with spiny branches, are Yucca.

a disagreeable taste that animals will not eat them. Thus they are further protected.

At one time the most common animal in much of this arid section was the bison, or (8) Animals of buffalo (Fig. 30), whose home was on the prairies and arid plains east of the Rocky Mountains. Thousands upon thousands of bison were slaughtered for their hides and tongues alone, and their bones left to whiten upon the plains. There are now no wild bison in the United National Park, many of these animals are seen there. Deer and elk are common; also black, cinnamon, and grizzly bears, which are so tame that at night they come close to the hotels to feed upon the garbage.

Between the frigid and torrid zones, and both east and west of the arid 3. In other region, is a temperate belt of parts of temmoderate rainfall. The climate perate North is warm in the south, cool in the central part, and cold in this region



Fig. 30. - A herd of bison, which once roamed over central United States.

States, except a few in the Yellowstone National Park of Wyoming, where they are protected by the government (Fig. 196).

The graceful antelope, the cowardly prairie wolf, or coyote, and the rabbit, upon which the coyote feeds, are still to be seen (Fig. 31). Among the rabbits is the long-legged jack rabbit, which leaps across the plains with astonishing speed.

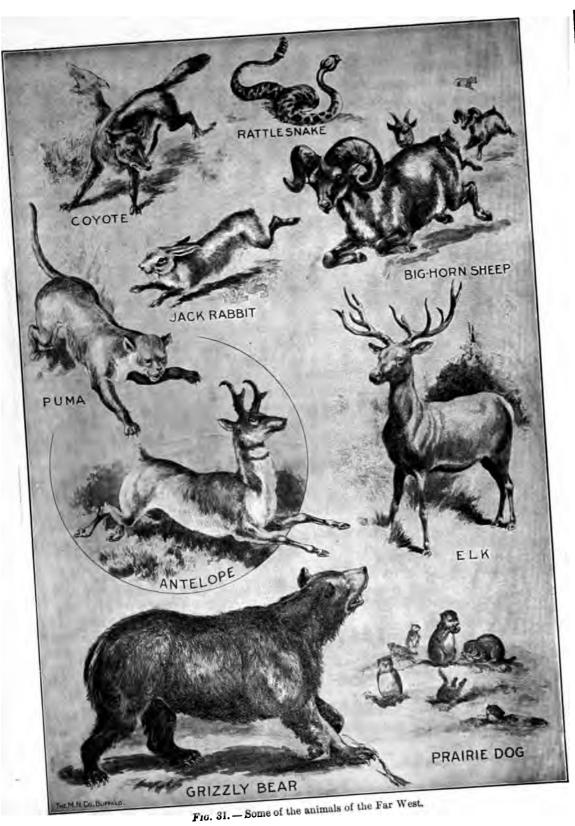
The fierce puma, or mountain lion, and the ugly cinnamon and grizzly bears (Fig. 31) still live among the mountains, though they are now rare and difficult to find. Deer and elk inhabit the forestcovered mountains of southern Canada and the northwestern part of the United States; and among the higher peaks a few mountain goats and sheep are still to be found (Fig. 31).

Since no hunting is allowed in the Yellowstone

the north. Here both the plants and animals differ from those of the arid regions.

In the warm southern part, the plant and animal life is abundant, and of many kinds. Both plants and animals become less numerous and less varied toward the north, until, near the Arctic zone, they are scarce and few in kind. The pines and oaks of the United States give place to the spruce, balsam fir, and maple in Canada; farther north these gradually become stunted and disappear; and finally the treeless barrens are reached.

Some persons believe that at one time most of the eastern part of the United States



was wooded, including the fertile prairies of the Mississippi Valley. They think that the trees were burned from the prairies by fires set by the Indians. Others believe that the prairies were always treeless, being too level and swampy for trees to grow.

When America was first visited by Europeans, our woods abounded in deer (Fig. 23) Animals of 32), moose, caribou, wolves, this region and foxes (Fig. 33). Beavers built dams across the streams; the mink

and otter fished in the waters; and bears roamed at will. Among the birds, the eagle was common (Fig. 33), and wild pigeons and turkeys were so abundant that they were one of the principal foods of the early settlers.

Now most of these animals have been destroyed, although some still live in the forest and mountain region. Some of

them, like the deer, are now carefully protected by state laws, which prohibit shooting them except at certain seasons, and then only in small numbers. In the forests of Canada and in Alaska, many wild animals are still left.

It might seem that the native plants and animals of temperate North America would 3. Native plants soon disappear. For the white and animals man has come into possession that will remain of the land, and has cut down much of the forest, and plowed the prairies, so that where trees once stood, and game was plenty, there are now fertile farms and thriving cities. Not all will be destroyed, however, for some of the forests will remain, and many wild plants will grow in the uncultivated spots. The birds and some of the smaller animals will be able to survive; and in the forests larger animals, protected

to some extent by law, will continue to roam about freely. In addition, a few of the animals and plants, which man has found useful, have been domesticated, and these will continue to thrive.

Our domesticated plants and animals well illustrate how man has learned to make use of nature. At one time, every variety of plant that we now cultivate was wild; and our domesticated animals have all come from wild stock. Most of these have been found

in Europe and Asia, but America added some to the The Indian corn, or maize, the tobacco, tomato, pumpkin, and potato were unknown to the Old World until America was discovered. The same is true of the turkey, and perhaps, in a hundred years, the bison may be included among the



Fig. 32. - A wild deer on the edge of the forest.

domesticated animals, for a few small herds are now being carefully reared on the cattle ranches of the West.

In the torrid zone, the climate is warm or hot, and in most parts the rainfall is so heavy that the conditions are Plants and favorable for dense vegetation. animals in the Indeed, the tangle of growth torrid zone in the forests is so great that 1. The plants it is often impossible to pass in this region through it without hewing one's way. sides trees and underbrush, there are quantities of ferns, vines, and flowers, many of which hang from the trees with their roots in the air instead of in the ground. They are able to live in this way on account of the moisture in the air. Among the trees are the valuable rosewood, mahogany, ebony, and rubber tree, and among the flowers are the beautiful orchids. On account of the





Fig. 34.—Some of the animals that live in the tropical part of North America.

continual warmth and dampness, many plants, such as the banana, bear fruit throughout the year.

In the midst of such luxuriant vegetation, animal life is wonderfully varied and abun2. The animals dant. There are the tapir, in this region monkey, and jaguar (Fig. 34); brilliantly colored birds, such as parrots and humming birds; and there are millions of insects. Scorpions and centipeds abound, and ants exist in countless numbers, some in the ground, others in decayed vegetation. Serpents, some of which are poisonous, are common in the forests; and in the rivers are fish and alligators, the latter being found as far north as Florida and Louisiana.

2. Peoples

America was inhabited for thousands of years before it was discovered by white men. To the natives in the southern part Columbus gave the name *Indians*, in the belief that he had reached India. Those in the Far North, who live on meat, are called *Eskimos*, a word



Fig. 35.— An Eskimo mother and her children. The very young children are carried on the back in a sealskin bood.



Fig. 36. - An Indian woman and child.

meaning flesh-eaters (Fig. 35). What do you recall about their manner of life from your study of the First Book?

Indians were at first scattered over most of the country south of the Arctic Circle. That this was so is suggested The Indians by the many places that bear 1. Their dis-Indian names, such as Narra-tribution gansett, Erie, Niagara, Huron, Ottawa, Illinois, Dakota, Pueblo, and Sioux City.

Some of the tribes were true savages; others, not so savage, may be classed as barbarians. The barbarians 2. Their civraised "Indian corn," pump-ilization kins, and tobacco; they baked pottery; used tools and weapons made of stone; and lived in villages.

The Indians that were most nearly civilized lived in the southwestern part of what is now the United States, in Mexico, and in Central America. Much of that region is arid, but the Indians raised crops by irrigation, and built houses of stone and sundried brick (Fig. 37). These houses, called



Fig. 37. — An Indian Pueblo in New Mexico, called the Taos Pueblo. It is made of adobe, or sun-dried brick, and to enter the rooms the Indians must first climb a ladder.

pueblos, were used partly as homes for protection from the neighboring savages, and partly as storehouses for grain.

The most noted among these Indians were the Aztecs, who lived in and near the region where the City of Mexico now stands. They had a much better government than the barbarous and savage tribes; they mined gold and silver, and made various articles out of these metals; they wove blankets, and ornamented their pottery and their buildings in an artistic manner. Living the quiet life of the farmer, the Aztecs preferred peace to war, and a settled home to the nomadic life of the hunter.

Although some tribes thus approached civilization, the Indians, as a race, never seeme a powerful people.

There are several reasons for this.

In the first place, there were never very many Indians. There are probably nearly as many now living in the United States as ever lived here. Yet all of them together number only a little over a (1) Because of quarter of a million, or about their small the number of persons now number living in Washington, the capital of our country.

Again, instead of forming a union, and living at peace with one another, they were divided into many independent (2) Their divient tribes. Each tribe had a sion into many certain section over which it independent tribes could roam and hunt, but if it went beyond this, war might follow. War did follow very often, and thus they were constantly weakened by fighting.

The level nature of a large part of the country greatly increased this danger of war, and prevented any one (3) The level tribe from advancing in civi-nature of the lization much beyond its neighbors. Had the surface of North America been very mountainous, there might have been some places where a tribe would be protected by surrounding mountain walks.

Then those Indians might have dared to devote themselves to other work than war; and they might even have collected wealth and developed important industries.

But the vast plains of the Mississippi Valley, and the extensive plains and low mountains of the East, afforded little protection. If any one tribe had built good homes in this section, and collected treasures within them, the neighboring Indians would surely have attacked them. The Aztecs were constantly in danger from this cause. However, the fact that they were partly protected by mountains and deserts, was one of the reasons why they became more civilized than the Indians of the Northeast.

The fact that the Indians had no domestic animals for use in agriculture, was another reason why they did not make more progress. The horse, animals cow, ass, sheep, goat, and hog are of great service in supplying food and materials for clothing, or for helping in farm work. Without them farm work becomes the worst drudgery, because it is then necessary to do all the work by hand. Since the Indians had none of these animals to help them, they could do little farming.

Still another reason was lack of food. Although there was much game, the supply was never sufficient to support a dense population for a long period. Even the scattered Indian population was obliged to wander about in search of it. This prevented them from living quietly in one place, and finding time for improvement.

All these facts helped to prevent the Indians from becoming civilized. On the other hand, the fact that they were not better civilized was a great advantage to the white men; for that made it easier to obtain possession of the New World.

The astonishment of Europe was great when it was proved that there were vast territories on this side of the Atlantic held only by savages. America was pictured as containing all sorts

of treasures, and European nations outdid one another in fitting out expeditions to take possession of them.

The Spaniards naturally led, for at that time they were one of the most powerful nations of Europe; and besides, 1. Section of they had sent Columbus on his the continent voyage of discovery. Columbus sailed from Palos, in Spain, on his first voyage, and his ships were carried by the winds southwestward to the West Indies, a point much farther south than Spain itself. On a globe find the point on our coast that is about as far north as Madrid.

The section reached by the Spaniards had a climate somewhat like that of their own country, and they easily made themselves at home there. Soon they came into possession of most of South America, Central America, Mexico, and the southwestern part of the United States (Fig. 38). Spaniards had one advantage over the English and French, who settled farther north; the portion of the continent that they discovered is so narrow that they easily crossed it. Thus they were able to explore both the Atlantic and the Pacific coast. largely because of this fact that the Spanish settled the western coast as far north as San Francisco.

While robbing the Aztecs of immense quantities of gold and silver, the Spaniards introduced many Spanish laws and customs; natives in addition they cruelly mistreated the natives, killing many and enslaving others, forcing them to work in the mines and fields.

Although Spanish-speaking people still occupy Mexico and Central America, Spain herself has now lost all hold upon this continent. Her last American colonies, Cuba and Porto Rico, were recently given up.

One of the reasons why the Spaniards have not been more successful is the climate of the section which they settled. In hot countries so little energy is required to pro-

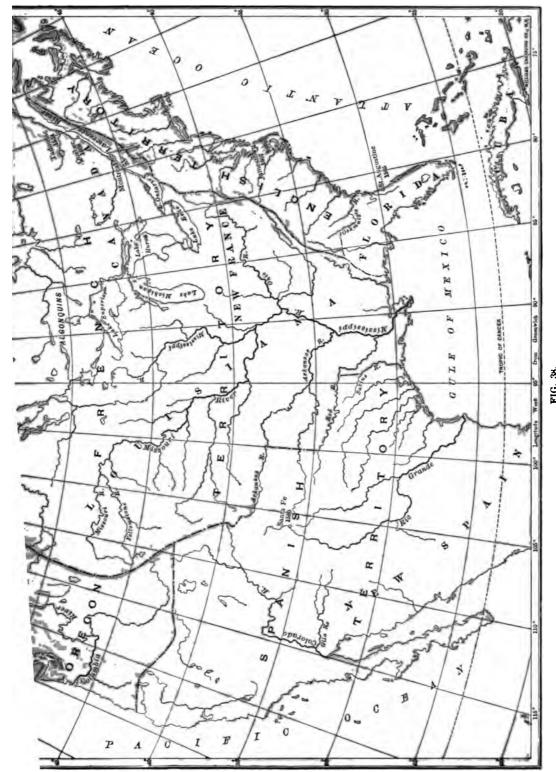


FIG. 38. Map showing the claims of France, England, and Spain upon the central part of North America in 1700.

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vide food and shelter that the people do not need to exert themselves; and hence they do not do so. With but slight effort the Central American can find bananas, or other nourishing food, at almost any season of the year; why then should he work? The people, therefore, become too lazy to improve their condition. A large part of the region settled by the Spaniards is too warm to produce people of energy.

Another reason why the Spaniards did not have better success is found in their relation to the Indians. Although robbing and enslaving them, they intermarried with



Fig. 39. — Mexican two-wheeled cart with wooden wheels, such as a backward people might use.

them freely, so that a large portion of the people are now half-breeds. These half-breeds are an ignorant class, far inferior to the Spaniards themselves, and so backward (Fig. 39) that they still follow many of the customs of the Aztecs.

The French began their settlements in a
very different quarter, being
early attracted to our coast by
the excellent fishing on the Newfoundland
Banks. Soon the fur trade with the Indians
proved profitable, and the
French took possession of
Nova Scotia and the region
along the St. Lawrence River
and the Great Lakes.

The value of the fur trade, together with a desire to convert the Indians to Christianity, led the French as far west as

Wisconsin and to the headwaters of the Mississippi River. Making their way southward to the mouth of that river, they took possession of the whole Mississippi Valley (Fig. 38), calling it Louisiana in honor of their king, Louis XIV. In order to hold this vast territory, they established a chain of trading posts and forts from the Gulf of St. Lawrence to the Gulf of Mexico. One of the most important of these forts was built where Pittsburgh now stands. Many places in the St. Lawrence and Mississippi valleys still have French names; for example, Lake Champlain, Marquette in

Michigan, La Salle in Illinois, St. Louis, and New Orleans. Can you name others?

The climate of the French territory was, on the whole, more favorable than that of the Spanish country; for, though rather

Valley, it was neither hot enough to make people lazy, nor so cold as to discourage them. One of the greatest difficulties was that the few

scattered settlers were unable to protect all of the vast territory to which the French laid claim. Also, the French intermarried with the Indians and adopted some of their customs, although not to so great an extent as the Spaniards.

The Spanish and French left only a narrow strip along the Atlantic coast for other nations. Among those who made settlements there were the Dutch in New York, and the Swedes in Delaware; sottlements but the English soon obtained the lead. The English captured New York City (then called New Amsterdam) from the Dutch, and made settlements along most of the coast from Florida to Nova Scotia.

In several respects the portion that fell to the English seemed much less desirable

than that held by the Spanish and French. Yet the English-speaking race has managed,

not only to hold this, but even to add to it most of the possessions of the other two. At the present time, the control of the entire continent, except Mexico, Central America, and a few small islands, is in the hands of either the United States or Great Britain.

There are, of course, good reasons for this remarkable result. No doubt, differences in s. Reasons the characters of these three for this races is one cause. Yet there are others also, as is shown in the following paragraphs.

The temperate climate of the central portion of North America is one of the best in the world for the production of people of energy. The warm summers allowed abundant harvests; while the long, cold winters forced the settlers to work hard in order to store up supplies for the cold season; but, although they had to work a great deal, they still had time and energy left for improvement.

Again, the English were less cruel than the Spaniards in their treatment of the Indians; but, unlike both French and Spanish, most of the English would not intermarry with savages. Thus it happened that, in the wars with the French, the English could act with more intelligence, speed, and force; for they were not hindered by partly civilized half-breeds. There was one disadvantage, however: the Indians became enemies of the English, and in the wars between the English and French most of them fought on the French side.

Finally, the fact that the English were hemmed in by forest-covered mountains on the west, and by the French and Spanish on the north and south, also proved an advantage. On that account, they were kept close together; and when wars arose, they were better able to combine their forces.

These are some of the chief reasons why the English-speaking race has won its way on the continent against both the Spanish and the French.

- 1. What is the influence of climate on plants and animals? 2. Describe the plants of the Far North. 3. What animals are found in the Far North? What can you tell about them? 4. What about the Questions plant life in our western arid lands? 5. Describe the animal life in that region. 6. Describe the plant life in the temperate portion of North America 7. Tell about the animal outside of the arid lands. 7. Tell about the animal life in the same region. 8. What native plants and animals are likely to continue here long in the future? 9. What is the condition of plant life in the torrid zone? 10. Of animal life? 11. What was the condition of the Indians who formerly lived here? 12. Give several reasons why they did not become more powerful. 13. What portion of the continent was taken possession of by the Spaniards? 14. How did they treat the natives? 15. Give some reasons why they have not held their territory. 16. What portion of the continent was taken by the French, and why? 17. State some reasons why they have lost this territory. 18. Where were the earlier English settlements? 19. How much of the continent is now in control of English-speaking people? 20. Give some reasons for this remarkable fact.
- 1. Examine some century and cactus plants.
 2. Find some furniture made of mahogany or other tropical wood.
 3. Visit a greenhouse to see orchids.
 4. Collect Suggestions pictures of native plants and animals of North America.
 5. Collect samples of different American woods.

III. THE UNITED STATES

1. General Facts

On Figure 9 we see that the United States occupies the central Location and part of North America, exarea tending from ocean to ocean.

Aside from Alaska, which belongs to us, the only countries on our north are Canada, Newfoundland, and Greenland. On our south are Mexico and the several small countries of Central America. Trace our boundaries on the north and south. What portions are artificial? What portions natural? Is the distance across the United States greater from east to west, or from north to south? How much greater?

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FIG. 40.



FIG. 40.



Fig. 42. — Relief map of the United States.

The area of the United States is about 3,000,000 square miles, which is more than four times the area of Mexico. Yet ours is not the largest country on the continent, for the area of Canada is greater than that of the United States and Alaska together.

Figure 43 shows the part of the United States that was settled before 1790, when Population and George Washington was Presitts distribution dent for the first time. What in 1790 states do you find that had no inhabitants other than Indians? Which had only scattered settlements, such as forts and small villages? Each of the cities shown on this map had a population of over 5000. What are their names? How about Chicago and St. Louis? All together there were only a little over 3,000,000 white men here at that time.

Our present population is about Our present 92,000,000. The present population population of Canada is over 7,000,000, of Mexico about 15,000,000, and

of Central America about 5,000,000. Not only have we more inhabitants than the other countries of North America combined, but we have more than all the countries of North and South America together. Ours has plainly been the favorite country for settlers in the New World.

This remarkably rapid increase in population has, to a large extent, Reasons for been due to the number of this rapid foreigners who have come increase here to live.

The early introduction of slavery has resulted in greatly increasing our numbers. There are now over 9,000,000 colored people in the United States, which is about one tenth of our entire population.

Europe and Asia have poured forth a steady stream of immigrants during the last one hundred from Europe years. Probably, in all, as and Asia many as 25,000,000 foreigners have come

to our shores to live since 1790, and they are still coming at the rate of about a million a vear. Nearly every foreign nation is represented, and upon the streets of our larger cities the languages of most of the civilized peoples of the globe may be heard.

The greater portion of our immigrants have come from northern Europe, especially from the British Isles,

Supplement of the state of the

Fig. 43. - Distribution of population in the United States in 1790.

on in the United States in 1790.

The present distribution of our population.

Where is the population most dense? Note that more than half of the whole country has, on the average, not more than twenty-five persons for each square mile. Point out

and many of them

have settled in

recently a flood of

immigration has

come from south-

ern Europe. At

one time the

Chinese began to

come in great

numbers, and laws

preventing their coming had to be

passed. We have

laws, also, excluding paupers, crim-

inals, diseased

people, and labor-

ers brought here

by contract.

More

the cities.

this portion.

According to this map, which portion of North America has fewest settlers? What part of Canada is most densely populated? Of Mexico? Of Central America? Observe that the coast of the United States is most densely settled, while the coast of Mexico and Central America has few people, compared to the interior. Can you recall any explanation of this?

It is natural that the eastern section of the United States should have been settled first, because most of the immigrants have come from such distribution.

Europe. Many of them, of course, have gone farther west, but many have rethe East mained in the great cities on the coast. Each large city there has its Italian quarter,

Germany, and the Scandinavian Peninsula;



Fig. 44. — Density of population in North America at the

its Russian quarter, its Jewish quarter, and so forth.

The transportation of goods is one of the great industries, and this business alone has

attracted large numbers of S. Many people collect at the people to certain points. The best shipping points, moreover, best shipping and manufacturare often the best manufacing points turing centers, for people manufacture goods at those places where raw materials can easily reach them, and where finished articles can be shipped away The excellent cheaply in all directions. shipping points, therefore, attract people because of the manufacturing as well as the commerce; for these industries give them work to do.

It is for these reasons that the fine harbors on our two coasts, and the best shipping centers on our interior water ways, have attracted the greatest number of On Figure 44 note the sections people. that have the densest population. eastern coast, from Boston southwest to Washington, has more great centers of population than any other equal area in North America. Name several of them. great cities do you find along the Great Lakes and the Mississippi River and its larger tributaries? There is a dense population, also, about San Francisco Bay, as there is around New York Bay, and for a similar reason. Find other centers of dense population on the Pacific coast and in the interior.

The greatest industry of all is farming,

about one third of all the men

3. Others are attracted to the best farming sections

of the United States being engaged in that one occupation. That fact largely explains the (1) Extent of presence of so many people in the Mississippi the Mississippi Valley. Valley

This broad trough between the mountain systems of the West and East is one of the most extensive fertile farming regions in the world. What is the length and breadth of this level region (Fig. 42)? There is only one mountainous section in this vast area, and that, called the Ozark Mountains in Missouri, extends also into Arkansas, Oklahoma, and Texas.

Not only is this fertile region very extensive, but the climate is favorable to many kinds of farm products. On (2) Its favor-Figure 40 find the latitude of able climate New Orleans. Note that it is not very far from the Tropic of Cancer, which marks the northern boundary of the torrid zone. How near does Florida come to that zone?

What is the latitude of our northern boundary? Observe how very far it is from that line to the Arctic Circle (Fig. 9), which marks the southern boundary of the It is plain not only that the frigid zone. United States lies in the temperate zone, but that it lies almost entirely in the southern half of that zone. That allows an abundance of heat in summer, even in the northern part of the Mississippi Valley. Thus the entire Mississippi Valley has a temperature that is very favorable to agriculture.

The rainfall is likewise favorable in most Only far to the west of the Mississippi River, on the Great Western Plains (Fig. 42), is the quantity of rain too small for agriculture. From the Great Western Plains eastward to the Atlantic Ocean the rainfall is sufficient for good crops.

While the Mississippi Valley is the most extensive farming section in the United States, there is also much farming farther east and in the West. The favorable climate and good soil in the East, in the Mississippi Valley, and in parts of the West have helped greatly in attracting settlers.

Mining as well as manufacturing, commerce, and farming have at-4. Others, still, of are drawn to tracted great numbers people to the eastern half of the mining and Most of grazing sections the United States. (1) Mining in our hard coal is mined among the East the Appalachians of Pennsylvania. Most of our soft coal and iron ore, and much of our copper, also, are found east of the Mississippi River. These kinds of mining, therefore, increase the population in the East by many hundreds of thousands.

The mountainous section in the West, in which mining is important, is far more ex-(2) Mining in tensive than the Appalachians. the West This is the region of the Cordillera, mentioned on page 4. Beginning at the Pacific coast (Fig. 42), you see the mountains called the Coast Ranges, parts of which rise abruptly from the water's edge. Eastward from these are the Sierra Nevada and Cascade Ranges, in which there are many lofty peaks. Farther east are the Rocky Mountains, which extend entirely across the United States, into Canada and Alaska on the north, and far into Mexico on the south. Extensive plateaus, with short mountain ranges, lie between the Rocky Mountains and the Sierra Nevada-Cascade Find the names of the two principal plateaus on Figure 42.

There are many mines in this section, but they are scattered over the vast territory. The precious metals, and much copper and other metals are found there; but far less coal and iron ore are mined in the West than in the Appalachians. The mining industry, therefore, has brought a much smaller and more scattered population to the Cordillera.

In much of the western half of the United States grazing is the leading industry. (8) Grazing That calls for a very small population, for reasons that in the West you can give. Over wide areas grazing is the only industry, because much of the land is arid or desert. Find the Great Basin (Fig. 42), which is mainly desert. reason for so dry a climate is that the principal winds for this region blow from the Pacific; and, since they lose most of their moisture on the high mountains, the lowlands and plateaus between the mountain ranges suffer from drought.

Figure 44 shows most of the western half of our country to be very thinly settled, but there are several places that have a dense population. Point them out. The special reasons why so many people have settled at these points you will learn later. Our country is so large that it is necessary to divide it into sections in order to study it in proper detail. Accordingly, Reason for the states have been grouped into five sections, of which United States the first is the New England in sections Group. The others, in their order, are the Middle Atlantic States, the Southern States, the Central States, and the Western States.

As you study each of these sections, a very important point to notice is the scale upon which each map is drawn. Importance of For example, in Figure 45, an watching the inch and a half represents scale of maps about one hundred miles. According to that scale, how long is the state of Connecticut? Find what the scale is on the map, Figure 64. Using that scale, find the distance from New York to Buffalo. Using both maps, find the distance from Philadelphia to Boston, by way of New York. When studying a map, whether in this book, on the wall, or in an atlas, it is always important to first observe its scale.

1. State the location and area of the United States. 2. What was our population and its distribution in 1790? 3. What is our present population, and how does it compare with that of other countries

Review Questions in the New World? 4. How many colored people are there in the United States? 5. What immigrants are allowed to come here? How many have come, in all? 6. What is the present distribution of the population of North America? 7. Show why the place where the immigrants land is one reason for so great a population on our eastern coast. 8. Explain the influence of our best shipping and manufacturing points on the distribution of our people. 9. What farming sections have attracted great numbers of people? Give reasons. 10. How has mining affected the population in the East? 11. Why is the western half of the United States so thinly settled? 12. Show, by an example, that it is important when studying maps to observe the scale. 1. Can you tell why Florida is so thinly settled?

2. Show the dangers that we run, in receiving so many immigrants. 3. What reasons can you give for forbidding Chinese immigration? 4. What objection do you see to allowing an Italian quarter, a Chinese quarter, etc., in our large cities?



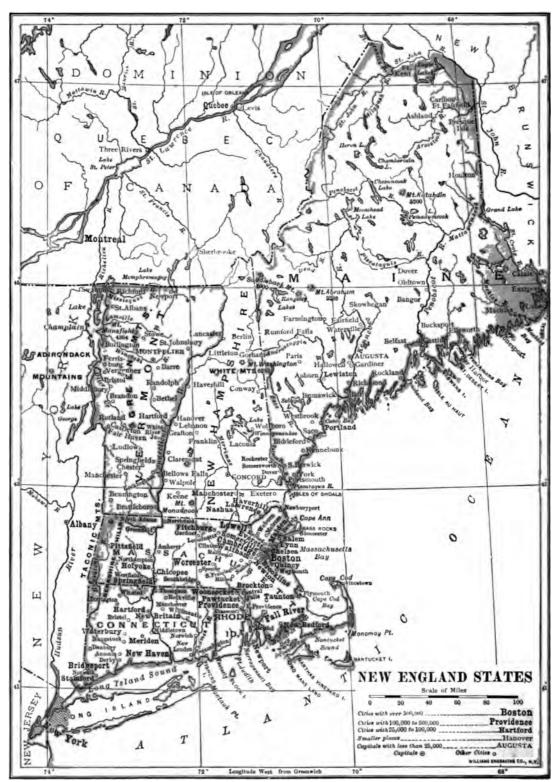


FIG. 45.

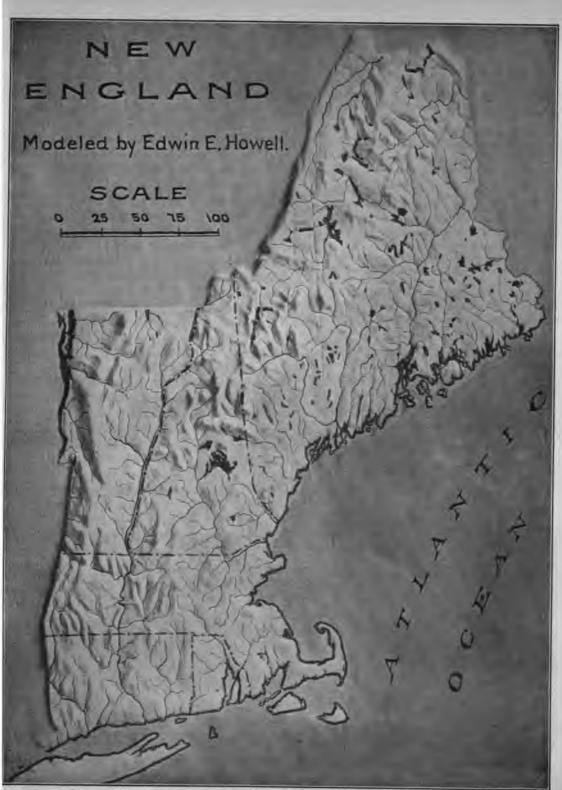


Fig. 46. - Relief map of New England.

2. New England

1. Name the states of this group. 2. What is the capital of each? 3. Where are the mountains? 4. Iuto what bay does the Penobscot River flow? 5. What large island lies just east of it? 6. Find three large lakes. In which state is each? 7. Name and locate several of the largest cities. 8. What cape is about twenty-five miles north of Boston? 9. What cape is southeast of Boston? 10. Find Massachusetts Bay. 11. Find Cape Cod Bay. 12. What two large islands lie southeast of Massachusetts? 13. What two bays are near them? 14. What large island lies south of Connecticut? 15. In what state is it (Fig. 64)? 16. What waters separate it from Connecticut? 17. Name the three largest rivers of Maine; the largest one in New Hampshire; the two largest in Connecticut. Trace the course of each.

Since the Appalachian Mountains extend across New England, most of its surface is either hilly or mountainous.

Near the coast the hills are low, but the land gradually rises toward the interior until it becomes a low plateau. This plateau is crossed by river valleys that cut

plateau is crossed by river valleys that cut into it in every direction. The valleys are usually several hundred feet deep, with steep sides, so that the surface there is very irregular.

In the western and northern parts of New England, the surface becomes quite mountainous (Fig. 47). There are some peaks, like Mount Monadnock in southern New Hampshire, that rise singly above the plateau upland; but others are found in groups, or clusters, as the White Mountains of northern New Hampshire, for example. Still other mountains are grouped in irregular ranges, of which the Green Mountains of Vermont, and the Taconic Mountains and Berkshire Hills of western Massachusetts, are examples.

Many of the mountain peaks rise three or four thousand feet above sea level; but Mount Washington, in the White Mountains, has an elevation of over a mile, and Mount Katahdin, in Maine, is nearly as high. In Figure 45 find the various mountain peaks and ranges named.

On page 7 you learned that the Great Glacier made many changes in our country. This glacier extended over the 2. The Great whole of New England, and for Glacier a long time its front rested on the islands just south of this group of states. Indeed, Cape Cod, Martha's Vineyard, Nantucket, and Long Island are made in part of moraine hills and sandy plains that were built in front of the vast ice sheet.

As the ice melted away toward the north, it left moraines and other deposits farther north. Some of these dammed up the

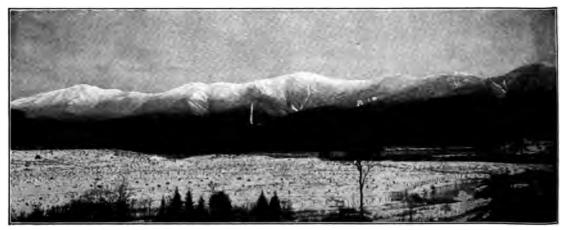


Fig. 47. - A view of the White Mountains of New Hampshire.

streams and formed the many lakes that dot the surface of New England. Others turned the streams from their courses, and caused their waters to tumble in many rapids and falls. Besides this, the glacier plowed away the soil from many hill slopes, leaving bare rock ledges. It also carried much rock into the valleys and on to the lower hilly land. It was in this way that much of the farm land became strewn with bowlders, as shown in Figure 23.

The sinking of the coast has given New England a very irregular outline. What s. The sinking of the coast have you already learned about this (p. 11)? Name some of the larger capes, bays, and islands that were thus formed.

The mountain rocks of New England are mostly hard, including many granites. Where the sinking of the land has lowered these into the sea, the beating of the waves has removed the soil and exposed the bare rock. This is why so much of the irregular coast is rock bound, and has such grand scenery.

Maine does not reach quite so far north as do several of our Western States. Name them (Fig. 40). Yet this sec-The climate tion lies far enough north to have a rather severe climate; and a cold ocean current near the coast makes the climate somewhat cooler than it would otherwise be. This is called the Labrador current, because it flows past the Labrador coast. It is a slowly moving stream of ocean water, many miles wide, that begins in the Arctic Ocean and flows southward along the coast of Nova Scotia and New England as far as Cape Cod (p. 222).

On the other hand, there is a current of warm water that makes the southern portion of New England warmer than it would otherwise be. This current, called the Gulf Stream, comes from the Gulf of Mexico and flows northeast, out into the Atlantic Ocean (Fig. 812). East of New England it is much farther from land than the Labrador current.

The prevailing winds in New England blow from the west. Every few days, however, the direction of the wind changes to the east or south, and the air then comes from the ocean, often bringing rain. winds that blow from the east and northeast are cool in summer and very chilly in winter, since they are cooled in passing over the Labrador current. They often cause heavy snows in winter, and rain and fog in summer. Those winds that blow from the south, on the other hand, are warmed in passing over the Gulf Stream. Largely for that reason, the southern part of New England is much warmer, and has little snow in winter.

In the days of the early settlers, most of New England was covered with forests, and one of the first products sent Lumbering back to England was lumber. 1. Extent of Now the woods have been the forests cleared away from much of the land, but where it is too steep or rocky for farming, large tracts of forest still remain.

For instance, there are large tracts of land in northern Maine, New Hampshire (Fig. 48), and Vermont, as well as in parts of the three southern states, that are still covered with timber. Standing on the summit of Mount Katahdin, one sees only a vast wilderness of trees in all directions. The nearest cultivated land is twenty-five miles to the east, while the unbroken forest stretches much farther away to the north and west.

Winter is the busy season for cutting timber in this wilderness, for the swamps, which are numerous, and in 2. Cutting of summer impassable, are then the timber frozen. At that season, also, the snows have covered the bowlders and fallen trees, and made the surface level enough for sleds, loaded with logs, to be drawn through the woods.

Usually fifty or more men are necessary to a logging camp. With axes in hand, they go through the woods chopping down all the trees that are large and sound enough

D

for good lumber. The limbs are then | others are held back by it. If the "jam" is chopped off, and the logs are dragged by | not speedily removed, the entire stream

horses to the banks of the nearest stream (Fig. 49).

When the snow melts in the spring, the cutting is overand another 3. Floating busy season bethe logs to the mills gins. The ice on the rivers breaks up, the streams are swollen by the melting snows, and the logs are whirled off downstream in the swift current. Frequently, however, even this flood of water is not sufficient to carry them. In such cases, in order to provide more water, dams are placed across the streams, or at the outlet of lakes. When more water is needed, the dams are opened, and a flood is poured into the stream. In this way

immense numbers of logs are floated, or "driven" downstream, forming what the lumbermen call a "log drive."



Fig. 48. - A forest-covered mountain slope in the New Hampshire mountains, where a large part of the surface is still occupied by forest.

may become blocked. Such a condition is called a log jam (Fig. 50), and it is the business of the log drivers to prevent jams

> by freeing the logs that become thus lodged.

Some of the logs are stopped near waterfalls, far upstream, where they are sawed into boards, laths, shingles, etc.; but most of them are carried to sawmills as far down the river as the current will take them.

During the season for cutting. the men go forth early in the morning and work

until late in the 4. Hardships of the lumbersleeping in log

There 51). Their beds are

broad shelves of rough boards, covered with boughs from the spruce and balsam

trees; and the camp is often so small that they must lie side by side, with scarcely room to turn. There is much exposure, too. The men may suffer



Fig. 49. - Lumbermen at work in winter, drawing the logs on sleds to the edge of the stream.

The work of driving the logs is a very ex-The logs often run on to rocks and shoals and, as soon as one gets caught,



A log jam in a stream in which the logs are being floated from the
 The lumbermen are at work trying to start the logs moving again.

sly from the cold, for it is often necessary to when the temperature is far below zero.

work of preventing log jams brings even more are, for the workmen must frequently wade into cy water and ride upon the logs. One may see a man carried along on a single log, clingbit by means of the sharp spikes in his boots, palancing himself with a long pole. Now and

he must jump from log 3, as a squirrel springs tree to tree. In this the men are often wet head to foot, and may be thrown into the and drowned. So hardships are cond with lumbering, that mberman is said to ne an old man after a cears of service.

he forests of New land supply much lue of lumber, though far than formerly. I have another imant use: they pre; the rain water

from running rapidly off the land. Where the forest has been carelessly destroyed by the lumbermen, or by fire, the streams rise rapidly after every rain and then quickly decrease in size. Often there is not enough water to run the factories that use the water power. Thus it becomes very important to preserve the forest, and the government is planning to set aside large areas, at the head waters of the streams, as forest reservations.

New England produces very little metal, and no coal. There are, however, some Quarrying valuable mineral products, such as clays for making bricks, and stone used mainly

for building. Among the building stones three kinds are of especial value; namely, granite, marble, and slate, each of which is quarried in large quantities.

Many of the hills, and even mountains, such as Mounts Washington and Katahdin,



Fig. 51. — Lumbermen and their log cabin in the woods of Maine.

are made mainly of granite. But this is not often quarried, because it is too difficult

1. Granite to draw the heavy stone to places where it is needed. The quarries have generally quarried been opened or developed either close to cities, or else near the sea, where the stone may be cheaply shipped.

One of the oldest stone quarries in the country is at QUINCY, near Boston (Fig. 45). Buildings made of Quincy granite over two hundred years ago may still be seen in Boston. Other quarries are found in and near

GLOUCESTER and MILFORD, Mass.; WESTERLY, R.I.; BARRE, Vt.; CONCORD, N.H.; and at several points along the Maine coast.

Much of the granite is used for paving stones in the city streets, where heavy wagons pass. For that purpose large blocks are split into smaller ones of the proper size.

Many of the large blocks are carried by boat to Boston, New York, or even as far as New Orleans, where they are used for curbstones, for building, and for other purposes. Some of the government build-

ings at Washington are made of New England granite. Another important use of granite is for monuments, columns, and other ornamental work. The stone is well suited for this purpose because of its beautiful color, which varies in different quarries. Some granites are gray, others almost white, bluish, or distinctly red; and most kinds will take a high polish.

The most noted marble quarries in the United States are near RUTLAND, Vt. (Fig. 2. Marble 52), where much of the stone is white, though some of it is streaked with blue. In other places in Vermont the colors of the marble are quite different, and often very beautiful.

This stone is too soft for paving stones, but it is much used for buildings, statues, and monuments. Indeed, the Rutland marble is one of the most common headstones in the cemeteries of the Eastern States. Like granite, it may be given a high polish.

Some of the most highly prized marble, mostly obtained from foreign countries, is so banded and mottled that, when polished, it makes a beautiful ornamental stone for interiors of churches and other buildings. White marble has been used for many centuries as building material. In fact, long before



Fig. 52.—One of the marble quarries near Rutland, Vt. The stone is quarried out in the deep pit on the right, and the blocks are hoisted to the surface by the derricks.

the time of Christ, the Greeks built the marble Parthenon upon the Acropolis of Athens (Fig. 454). They also chiseled out marble statues, such as that of the Venus of Milo, which have become famous on account of their beauty.

Slate rock is quarried in several parts of New England, as in eastern Maine and western Massachusetts and Vermont. The value of slate is due largely to the fact that it splits, or cleaves, so easily that it is readily broken into thin slabs with a smooth surface. In this way it is made into roofing slate and school slates; from it are also made blackboards, slabs for wash basins, and stone for use in the interior of buildings.

Still another raw product of New England is fish. When the country was first settled, great numbers of various kinds,

ally mackerel, halibut, and cod, were close to the shore. Such names as Cape Cod, Halibut Point, crabun-Lobster Cove, and Bass Rocks, given to places on the New nd coast, indicate this. Find the f these.

supplied the early settlers with one ir chief foods, and the fishing industry secame important. You will remember 25) that it was the fishing which sttracted the French to the American

and they still retain the to fish along the Newand shore.

sant near the coast, but
since they are
still found farther
from the shore,
da of vessels, and thouof men, are engaged
in catching them.
there, which is a center
tindustry, is the most
thing port in the United
but Boston, Portand Provincetown
ave an important fish
Locate each.

t of the mackerel are in spring and summer.

They swim together, on the

s of the ocean, in such numbers, or as fishermen say, that they may be seen from a distance. The fishermen ruise about in search of the mackerel, a swift, two-masted vessels, called ers (Fig. 53). When they see a ol," they spring into their great seine row over to the fish, drop a large net, ie, into the water, and draw it around chool." Then the seine is drawn in, ig a pocket and trapping the fish. s pocket enough fish are sometimes to fill hundreds of barrels. Some if sh are taken to port to be sold

fresh, but most are salted. This method of fishing is similar to that which the Disciples of Christ used in the Sea of Galilee.

Halibut and cod cannot be caught with a seine, for instead of swimming at the surface, these fish live on the sea 4. Halibut and bottom. They are caught in codfish winter as well as summer, (1) Where mainly on the Fishing Banks caught that lie off the coasts of New England and Newfoundland. Some of the Gloucester fishing vessels, however, go as far as



Fig. 53. — A Gloucester fishing schooner, just leaving port on a fishing trip.

Greenland and Iceland for halibut and codfish.

Halibut are very large, some weighing more than a man, and they are often caught upon single lines. Cod- (3) Method of fish may be caught in the same catching manner, though a trawl (Fig. 54) is more commonly used for cod than for halibut. The trawl consists of a number of hooks hanging from a single long line, all lowered into the water together and left there for hours. The fish swallow the bait on the hooks, and in this way many are caught at one time.

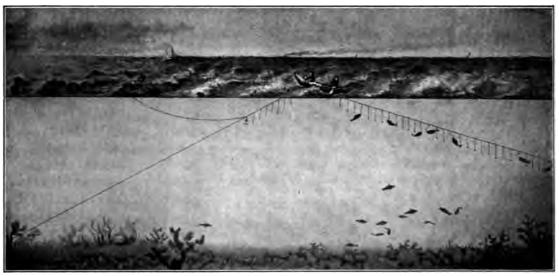


Fig. 54.—Fishermen drawing up a trawl on the Fishing Banks of Newfoundland. The long line, with shorter ones hanging from it, with hooks on their ends, is lowered to the bottom. After a while it is drawn up and the fish that are on the hooks are taken into the boat.

This kind of fishing is dangerous, because the men must venture out in small, flat-bottomed boats, called dories, to take the fish off the trawls. While they are busy fishing, a storm may arise, or a heavy fog come up, and prevent their return to the vessel. They are then left in open boats far out upon the ocean. Every year dozens of Gloucester fishermen are lost

in this manner.

As in the case of mackerel, codfish are sold either fresh or salt; but most of the halibut are sold fresh,

(4) Method of marketing to salt, or cure, the codfish, they are split open and cleaned, soaked in barrels of brine, and then dried upon the wharf. Very often the bones are removed, the skin stripped off, and the flesh torn into shreds and packed into boxes as boneless cod. Either the salted or boneless cod may be seen in almost any grocery, and much of it comes from Gloucester.

Traps, or weirs, are also set for fish. They are placed along the shore, and many kinds of fish, such as shad, salmon, and bass, swim into them and are then unable to find their way out. Another kind of fish that is caught on the New England coast is the herring, which is smoked and canned in large quantities at Eastport, Me.

Lobster fishing is also carried on, especially on the coast of Maine. A lobster trap, made of wood and weighted with stone, is lowered to the bottom, where the lobster lives, crawling around among the rocks and seaweed. A fish-head for bait is inside

the trap, and the lobster crawls in to get it; but he is so stupid that he is rarely able to find his way out.

Clams, found along many parts of the New England coast, live buried in the mud flats which are exposed to view at low tide. At such times boys and men dig these shellfish out, much as a farmer digs potatoes. Another kind of shellfish on the New England coast is the scallop; and still another is the oyster, which thrives in the shallow water of the bays on the southern coast of New England.

So much of New England is hilly or mountainous, and the soil is so strewn with bowlders, that farming is not Agriculture so extensive an industry as in 1. Importance many other parts of the coun- of this industry try. In some sections, where the soil is very poor and no market is near, farming has proved such a failure that many farms have been abandoned (Fig. 55). On these, the orchards are grown up with weeds, and the houses and barns are tumbling down. This is especially true in the more hilly parts of New England.

On the other hand, there are some sections where there is really excellent farm land. This is true in the larger valleys, particularly the Connecticut Valley, which has much level and fertile land.

Each farm usually has a small orchard and also produces hay and grain, which are either fed to cattle and horses, or sold. All the farmers keep ome poultry, selling the chickens and eggs;

Where the farms are so far away from the cities that it is impossible to drive to market, dairying is common (Fig. 56). So much milk is needed in the large cities that special arrangements are made for market-



Fig. 55. - An abandoned farm in the hilly part of New England where the soil is thin and sterile.

and some make a business of raising poultry, such as hens, turkeys, and ducks.

A very common occupation is truck farming. On truck farms various kinds of vegatables, like tomatoes, sweet corn, potatoes, sucumbers, cabbages, and celery, are carefully cultivated; and these, together with

ing it. Special cars, and even whole trains, carrying nothing but cans of milk, are run to them from far out in the country. A great deal of milk is made into butter and cheese, sometimes on the farm, but much more commonly at *creameries*, where the work is done by machinery.

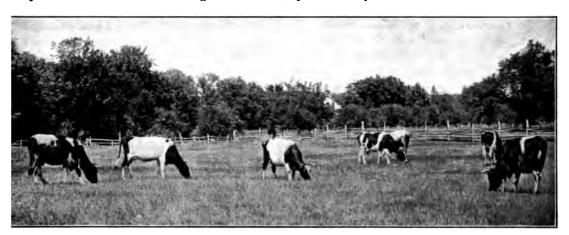


Fig. 56. — A herd of dairy cows grazing in the pasture. Their milk is sent to the cities.

nilk and eggs, are sent to the nearest town to be sold. The farmer often takes them to town himself and sells them from house to house, thus securing higher prices than if he sold them to a storekeeper. Why?

In the Connecticut Valley, the farms are often of good size, having fields of grain and fine large gardens and orchards. There are also extensive fields of tobacco.

Strangers traveling through New England, upon seeing the hilly surface and rocky soil, are often puzzled to understand how the farmers can earn enough to build such for such prodlarge houses and barns, to furnish ucta their homes so well, and to have so many books and pictures. The reason is that the cities, near at hand, give an excellent market for farm products. There are so many people in these states, especially in the three southern ones, that only a part of the food needed can be raised in this section. This insures a ready and profitable market for whatever food the land can produce.

When the Puritans settled New England, the articles that they needed had to be Manufacturing brought across the ocean at great expense. At first they 1. Extent of imported not only furniture this industry, with reasons and tools, but even wood for the interior of houses, and bricks for the walls, fireplaces, and chimneys. Even now, in some of the older New England houses, one sees doors and rafters that came from over the sea long ago.

Very soon, however, the settlers began to make such articles as shoes, cloth, and lumber. Thus manufacturing began early, and the industry was greatly aided by the water power (Fig. 57). It was also aided by the many lakes. These served as reservoirs from which the falls and rapids were supplied with water, even during times of drought. Many mills and factories sprang up near the coast, and later in the interior.

Thus New England soon became the principal manufacturing section of the whole country. To-day its many large cities owe their growth chiefly to this industry. Hundreds of articles are made, of which those composed of wood, cotton, wool, leather, and metal are the most important.

It may seem strange that these kinds should be manufactured, since most of these raw materials are not produced in great quantities in New England. The reason is that the abundant waterfalls furnished such excellent power that it paid to bring the raw materials there to be manufactured. Later the people learned to manufacture so

well, that factories were built even where there was no water power, as in Boston, where steam power is used. Since coal is now cheap, the location of a mill near an important railway, or near some other good shipping point, is a more important matter than its location near water power.

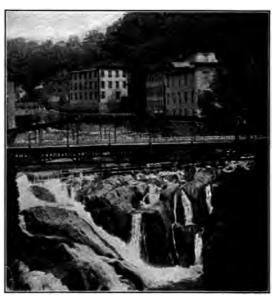


Fig. 57. - Factories in a New England village, which have been built because of the water power there.

The mouths of the rivers, being good shipping points, are natural sites for man-

ufacturing towns and cities. Many such towns in Maine are tures from the engaged in lumber manufac- forest The logs from the (1) Lumber, turing. forest are floated to them, and and articles made from it there much work, requiring

many men, is necessary to change these to lumber, and then to various useful articles.

For example, the city of BANGOR has grown up where the ocean tide checks the river current, so that the logs can be floated no farther; and vessels from the ocean can reach this point in order to carry off the lumber. The log drives of the Kennebec and Androscoggin rivers are stopped at the sawmills in several cities along their banks, such as WATERVILLE, and AUGUSTA, the

capital of Maine; but some are carried down as far as BATH, which is noted for its ship building. On the wharves of PORTLAND are quantities of boards ready to be shipped away to be made into boxes, barrels, doors, and hundreds of other articles.

Another important use of the forests is in making paper, for much of the paper commonly seen, such as newspaper and wrapping paper, is now made of wood. Short logs (two-foot lengths), after having the bark removed,



Fig. 58.—Men and women leaving the factory at the close of the day.

Notice how many people there are employed in this one factory.

are placed in a steel frame and forced against an enormous grindstone. The wood pulp thus ground off is carried away by water, run through a sieve, deposited on a wide belt, and pressed into thin sheets between rollers. When dry, it is paper. Wood pulp is also made by help of chemicals. We do not often think, when reading the news or wrapping a package, that the paper in our hands may once have been part of a live tree, perhaps in the woods of Maine.

Paper mills are found at RUMFORD FALLS, EAST LIVERMORE, EAST MILLINOCKET, and BANGOR in Maine. However, HOLYOKE, the greatest paper-making city in New England, is situated not in the forest region, but in the midst of busy cities in Massachusetts. There the pulp is generally made of rags, which produce a finer grade of paper. The neighboring cities furnish a large supply of the necessary rags.

The forest trees supply other valuable products besides lumber and wood pulp. One of these is tannic acid, used in tanning leather; it is made from the bark of the hemlock and other trees. Another product is maple sirup and sugar.

Among the trees in the forests of New England is the sugar maple, which is very common in Vermont, as well as in New York, Pennsylvania, Ohio, and

other states. Its sap, unlike that of most trees, is sweet; and if a hole is bored through the bark in early spring, when the sap is moving through the tree most rapidly, it will coze forth as a watery liquid. This is then boiled to drive off some of the water, thus making maple sirup and maple sugar.

There are about 400 cotton mills in New England, making such articles as sheets, towels, manufacturing stockings, un- (1) Extent and derwear, thread, variety of cotton string, handker-chiefs, and gingham and calico dress goods. As many as 1200 persons may be employed in a single mill, per-

haps three quarters of the number being women. One of these mills may consume from 60,000 to 70,000 pounds of cotton per day.

The cotton arrives in bales, each weighing about 500 pounds, and is made into cloth in the following manner: First, the dirt, small sticks, etc., are removed. Then the cotton fibers, of various lengths, are combed out straight and well mixed with one another. After that they are pressed into thin, gauzelike sheets. These are gradually drawn out and twisted into threads, and then wound upon spindles and taken to the looms for weaving. All this work is done by machinery.

Cotton cloths are nothing more than such threads woven together, those that extend lengthwise of the piece being called the warp, and those across it, the woof. An ordinary piece of calico has a warp of

perhaps 1200 threads, while a wide piece of cloth, such as a sheet for a bed, may contain as many as 2500. Stripes and other patterns are made by coloring the threads differently, and then, before the weaving begins, carefully arranging them according to some design.

After being sheared from the sheep, the wool is washed and freed from burs, sticks, etc. It is then untangled and (8) Method of combed out straight, after wool manufacture which it is twisted into yarn, much as cotton is twisted into thread. The yarn is woven into cloth for men s suits and overcoats, and also for coats, skirts, underwear, blankets, stockings, carpets, and dozens of other articles. Most, if not all, of the garments that you are wearing are made either of wool or cotton, or of the two mixed together.

Most of the cotton is brought from Texas and other Southern States, but some of it comes from Egypt and other (4) Where the cotton and wool foreign countries. None are obtained raised in New England.

The wool is cut, or sheared, from sheep, and much of that which is manufactured

into cloth in New England is obtained from Ohio and other states farther west. Large quantities are also imported from Australia, and a small amount comes from the New England pastures.

The following cities are engaged extensively in the manu-

facture of either (5) Chief cities cotton or woolen engayed in textile manufaccloth, or both: ture in Maine, BIDDE-LEWISTON, AUBURN, and Augusta; in New Hampshire, MANCHESTER, NASHUA, and Dover; in Massachusetts, LOWELL and LAWRENCE on the Merrimac River; PITTS-

FIELD in western Massachusetts, and FALL RIVER, NEW BEDFORD, and TAUNTON in

TUCKET, WOONSOCKET, and PROVIDENCE (Fig. 61), which is the second city in size One of the largest in New England. cotton factories in the world is at MAN-CHESTER, N.H. Locate each of these cities on the map.

Boot and shoe making is carried on in a number of cities, though the most important

are Lynn, Haverhill, and BROCKTON in Massachusetts. manufacturing Locate them. Besides boots (1) Cities enand shoes, leather is made into gaged in it, and many other articles, such as articles made

4. Leather

bookbindings, harnesses, pocketbooks, and bicycle saddles. Can you name others?

Leather is made from the hides of animals, such as cattle, sheep, goats, horses, and hogs. After the hair is (2) How leather removed, the hides are taken is prepared to tanneries, where they are soaked in tannic acid to make them durable.

Some of the tanneries are situated near forests, as in Michigan, where there are many hemlock trees whose bark produces the tannic acid. Others are in the mountains of North Carolina, where a kind of oak grows from which tannic acid is made.



Fig. 59. — Workmen in a shoe factory in Lynn.

Some of the tanneries of New England also are near the forest, but many, like those in and about SALEM, the southern part; in Rhode Island, PAW- | are far away from the forests. To these, both the hides and the bark must be brought a long distance. In some tanneries chemicals are used in place of the tannic acid from hemlock or oak bark. In a single tannery near Boston, where sheepskins are tanned, from 30,000 to 40,000 skins are prepared each week.

After being tanned, the leather is brought to the shoe factories and cut up, one machine cutting out soles of a certain size, a second tops, a third tongues, etc.; these parts are then sewed or nailed together, and the shoes are soon finished. As in the case of cotton and woolen manufacturing, nearly all the work is done by machinery, each person caring for one or more machines, and performing the same simple task day after day.

On account of the water power, the New England people early began to manufacture 5. Metal manumetals into various articles. facturing Although steam now largely takes the place of water power, these industries are still very extensive, especially in Massachusetts, Rhode Island, and Connecticut.

Since very little coal and iron are produced in New England, these two materials (1) Kind of must be shipped from other states. Therefore large, heavy objects, that require much metal and coal, are not generally made. The lighter articles, like jewelry, clocks, needles, cutlery, tools, and firearms, that require a

high degree of skill, are the chief articles manufactured from metal in New England.

Worcester (Fig. 61), west of Boston, is noted for the manufacture of wire and iron goods, besides envelopes, boots, (2) Cities enand shoes. Great quantities gaged in this of jewelry are made at Provindustry

Dence. New Haven is noted for hardware and firearms. Corsets, cartridges, and sewing machines are manufactured at Bridge-Port. Firearms, cars, and bicycles are made at Springfield and at Hartford, which is situated at the head of steamboat navigation on the Connecticut River. Fitchburg is also engaged in metal manufacturing.

Near Boston, at WALTHAM, the American Watch Company has an immense factory (Fig. 60), where 3100 watches are made every day. About 4300 persons, more than half of whom are women, are employed there. receiving about \$200,000 a month in wages. Great numbers of clocks and watches are made in WATERBURY, and jewelry and cutlery at MERIDEN, Conn. In hundreds of smaller cities, towns, and villages in New England there are factories and mills of various sorts. Some of the cities where cotton and woolen goods are manufactured, such as FALL RIVER, LOWELL, and NEW BEDFORD, are also noted for the manufacture of iron and other metals.

All this manufacturing calls for an im-



Fig. 60. — The Waltham Watch Factory at night. This is but one of the many large (actories of New England.

mense amount of lumber, cotton, wool, leather, metals, coal, and food; and most of these products must be brought from outside of New England. The commerce of New England is, therefore, extensive.

The rivers are not of great value for shipping these goods, because of their many rapids and falls. Most of them are also too short and shallow for boats. Thus, while of great service in manufacturing, the rivers have helped very little in transportation.

On the other hand, there are many good harbors along the coast. And although boats cannot ascend the rivers, railroads lead from the seaports to all parts of the interior. The railroads, together with the numerous steamship linés that ply between New England and other parts of the world (Fig. 61), furnish excellent means for transportation goods.

The most important of

Principal is BOSTON, Worcester. Notice the number of cities the fifth

1. Boston city in size in the United States. It is a great manufacturing center, being engaged in most of the industries already named, and especially in making clothing. Its great size is largely due to its excellent harbor (Fig. 61), and its central location.



Fig. 61.—Boston and vicinity. Also small maps of Providence, Portland, and Worcester. Notice the steamship and railway lines converging at Boston. Also the number of cities near Boston.

The port of Boston is third in importance in the United States. Great quantities of raw materials are received here, to be sent to the factories of New England; and the finished goods are shipped all over the world. Much grain and meat reach Boston from the West to be distributed

ng the smaller cities, or shipped abroad. return, ships from foreign countries; such articles as coffee, tea, chocolate, er, wool, hides, and bananas, which needed in New England.

eton and its vicinity have been important from arliest days of our history. There, at the being of the Revolutionary War, occurred the a Tea Party, Paul Revere's Ride, and the of Bunker Hill. The vicinity of Boston



22.—The Washington elm at Cambridge. It was under this tree that ashington first took command of the American army in July, 1775.

noted for its eminent men. Harvard College, dest in the United States, was founded in 1636 ambridge, three miles from Boston. Yale ge, at New Haven, was started sixty-five later, in 1701. Longfellow, Lowell, Holmes, agassiz were professors at Harvard; and Hawes, Emerson, Thoreau, and Whittier lived not tom Boston.

ufacturing cities and towns which also be mear serve as places of residence for the business men of Boston.

In the serve as places of residence for the business men of Boston.

In these the largest are CAMBRIDGE SOMERVILLE (Fig. 61), which have im-

portant industries of meat packing, machine manufacturing, and printing. Others are CHELSEA and MALDEN, each engaged in manufacturing rubber goods and other articles.

Not far distant is SALEM, which in colonial days was even more important than Boston. Since its harbor is too shallow for the deep ships of the present time, this city has lost much of its commerce, which is

now carried on in Boston. Notice, in Figure 43, that Salem was one of our large cities in the year 1790.

PORTLAND (Fig. 61), the largest city in Maine, has an excellent harbor, 3. Other large and is the eastern cities terminus of the Grand Trunk Railway, which runs through Canada. In winter, when the St. Lawrence River is frozen over, it is a shipping point for Canadian goods. NEW HAVEN, the largest city in Connecticut, and PROVIDENCE (Fig. 61), the largest in Rhode Island, are both on the seacoast.

The seacoast of New Hampshire is very small, and the largest city, MANCHESTER, lies inland near some falls in the Merrimac River; but on the coast is the important city

of Portsmouth. Vermont has no seacoast. Its largest city, Burlington, is a lake port on Lake Champlain.

There is so much manufacturing and commerce in New England, that great numbers of people dwell in the Summer cities; and during most of the resorts year, they are closely confined 1. Why a need in noisy factories, or in offices of vacations and stores. To these, the wooded mountains, the silvery lakes (Fig. 21), the winding rivers, with their falls and rapids, the green valleys, and the rocky seacoast, offer great

attractions; and every summer tens of thousands leave town for a week or more, to enjoy their vacations at these places.

Many go to the green slopes of the Berkshire Hills and Green Mountains, or climb

8. Where the people spend of the White Mountains (Fig. 63), to enjoy the wonderful scenery. Others plunge into the woods of Maine or northern New Hampshire, to hunt and fish, or to canoe upon the streams

and lakes; and still others settle down at farmhouses, to enjoy the quiet of the country (Fig. 56).

Many others go to the seashore, to escape the heat and to bathe in the salt water, or to sail and row. So many go there that a large part of the New England coast is dotted with summer cottages and hotels. Indeed, people come here from all parts of the States. Thousands visit BAR HARBOR, on Mount Desert Island in Maine, which is therefore a very busy place in summer. Along the coast, for many miles north and south of Boston, there are other noted summer resorts. Nantucket Island and Martha's Vineyard

are similar resorts farther south; while just west of them, on Narragansett Bay, is NEWPORT, noted for its many magnificent summer homes.

1. State to what extent the mountains make the surface of New England irregular. Name and locate the principal mountains. 2. Explain how the Great Glacier made important changes in New England.
3. How has the sinking of the coast made the coast line very irregular? 4. Describe the climate.
5. What about the extent of the forests in New England? 6. Tell about the cutting of timber.
7. Describe the floating of the logs to the mills.
8. What hardships are there in the lumberman's life? 9. What can you tell about the granite?

10. The marble? 11. The slate? 12. What about the former abundance of fish? Name and locate the centers for the present fishing industry.

13. What kinds of fish are now caught? 14. Describe the method of catching and marketing mackerel. 15. Where are halibut and codfish caught?

16. Describe the method of catching them.

17. What are the dangers connected with such fishing? 18. What is the method of marketing these fish? 19. What other ocean foods are found in this region? 20. To what extent is agriculture important here? 21. What are the principal farm products? 22. Why is there a good market for such



Fig. 63.—The railway up the slopes of Mount Washington, on which thousands of summer visitors are taken to the top of the mountain every summer.

products? 23. Why is manufacturing very extensive in New England? 24. Where is the manufacture of lumber carried on? 25. Tell how paper is made. 26. What other forest products are obtained? 27. What kinds of textile manufacturing are there in New England? 28. What is the extent of the cotton manufacturing? 29. Describe the method of manufacturing cotton and woolen goods. 30. Where are the cotton and wool obtained? 31. Name and locate the principal cities engaged in textile manufacturing. 32. What can you tell about leather manufacturing? 33. What are the principal kinds of metal manufacturing? Why? 34. What cities are extensively engaged in this industry? 35. What advantages has New England for commerce? 36. For what is Boston important? 37. Name other cities near Boston and tell about each. 38. Locate the other large cities. For what

is each important? 39. Why is there a special need of vacations in New England? 40. Where and how do the people spend them?

Maine (Me.). 1. Draw the coast line of Maine.

2. Why is it so irregular? 3. Find the principal rivers. 4. What cities are situated con each? 5. Should you expect tions by States much fishing along the coast? Why?

6. What reasons can you give why so

many people resort to the Maine coast and woods in summer? 7. Describe lumbering in Maine. 8. What cities are engaged in producing lumber? Why those? 9. What stones are quarried in the state? 10. Which is the largest city? How does it compare in size with Boston and Providence? (See Appendix, pp. 427 and 428.) 11. What other cities in Maine are mentioned in the text? Find them on the map. 12. Draw an outline map of Maine, locating the principal rivers and lakes, the capital, and other leading cities. Do the same for each of the other states as you study about it.

came for each of the other states as you study about it.

New Hampshire (N.H.). 13. What large lakes are found in this state? What river? 14. Name the cities on it. 15. For what are they important?

16. Why are there not more cities in northern New Hampshire? 17. What industry should you expect there? 18. Find Mount Washington; it is the highest peak in New England. 19. Where should you expect to find most farming? 20. How does the largest city in the state compare in size with Portland?

Vermont (Vt.). 21. What large lake forms a part of the western boundary? Into what waters does it empty? 22. What river flows along the eastern boundary? Through what states does it flow? 23. What is the name of the mountains? 24. Lumbering is carried on, as in Maine; into what waters must the lumber be floated? 25. What other Vermont industries are mentioned in the text? 26. There is also farming in the fertile valleys, and manufacturing, as at Brattleboro. Find Brattleboro. 27. Compare the size of the largest city with that of Manchester, N.H.

Massachusetts (Mass.). 28. Compare Massachusetts with Vermont and Maine in area; in population. (See Appendix, p. 425.) 29. Name the large cities near Boston (Fig. 61). 30. Find the principal cities mentioned in the text, and tell where each is located. 31. For what is each important? 32. What advantages do you see in the location of each? 33. Find Plymouth, where the Pilgrims lauded. 34. Where is the mountainous portion of the state? Name the mountains. 35. What effect should you expect the mountains to have upon agriculture? 36. State as clearly as you can the reasons why Boston has grown to be a large city. 37. Of what importance is Boston to the cities near by? 38. Of what importance are they to Boston?

Rhode Island (R.I.). 39. Compare this state with Massachusetts and Maine in area. It is the

smallest state in the Union. 40. What is the name of the bay in this state? What cities are located on it? 41. What large city is in Rhode Island? How is it important? 42. Compare its size with that of Boston and Portland. 43. Should you expect much lumbering in Rhode Island? Why? 44. What kind of farming? Why?

Connecticut (Conn. or Ct.). 45. Where are the mountains in this state? 46. Locate each of the cities mentioned in the text. 47. Tell how each is important. 48. The farms of Connecticut are better than those of Maine. Why? 49. There is little lumbering in the state. Why? 50. Compare the size of New Haven with that of Boston and Portland.

51. Name the principal industries of New England. In which states are they carried on? 52. Which industry do you consider most important? Make a list of the ten largest cities (see Appendix) in New England, the states they are in, and the chief kinds of manufacturing they are engaged in. 53. Make a drawing of the New England States, including the chief rivers, cities, mountains, and the state boundaries.

1. Read Whittier's "Snow-Bound." 2. Read about lumbering in Chase and Clow's "Stories of Industry," Vol. I. 3. Visit a stone-yard, or a Suggestions place where monuments are made, and collect some specimens from the chips in the yard. Put these in the school collection. 4. Find blocks of granite and of marble in buildings. 5. Make drawings of mackerel, cod, and halibut. You will find pictures of them in the dictionary. 6. Make a collection of cotton, wool, leather, and metals for the school; also make a collection of articles manufactured from each. 7. Find the present price of cotton per pound. At that price how much would the seventy thousand pounds, that one mill uses in a day, be worth? 8. What is the average wage, per hour, of the employees in the Waltham Watch Factory? If the working day is eight hours long, how many watches are made per minute? Per vear?

3. Middle Atlantic States

1. Which states have mountains? 2. Which has none? 3. What influence do you think the mountains have upon the industries?
4. What waters help to form the boundary of this group of states? 5. Where do natural boundaries separate the states? 6. Compare this group of states with New England in length and width (Fig. 45). Notice the scales of the two maps. 7. Which is the largest state? Is it larger or smaller than Maine? (See Appendix, p. 425.)
8. Name the three bays. Why has a city a better location at the head of one of these bays than at

the entrance? 9. Name and locate the capital of each state. 10. Find the capital of the United States Would a location nearer the center of the country be better? 11. Name the five largest rivers. Into what waters do they flow? Through what states?

New England, the map shows clearly that much of the region is mountainous.

Just east of the mountains is a low, hilly plateau of hard rock, called the Piedmont

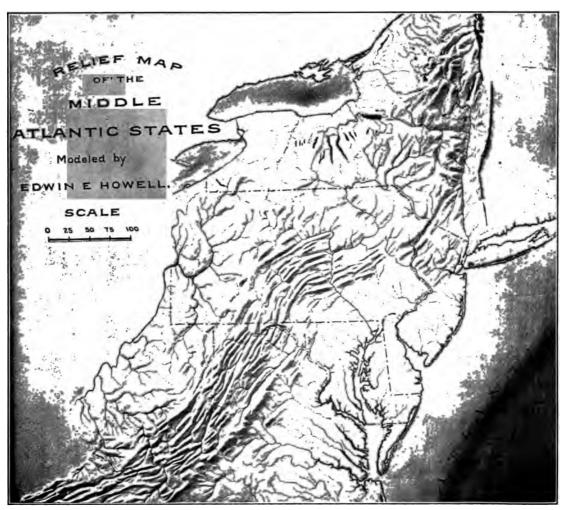


Fig. 65. — Relief map of Middle Atlantic States.

The Appalachian Mountains extend from northeast to southwest across these states.

Surface Note the number of parallel ranges. How great is the distance across this mountain the mountains system? What two mountainous sections do you find in eastern New York? While the surface of a large portion of these states is more regular than that of

Plateau (Fig. 42). This is really a worn-down mountain region like New England; in fact, it represents the very 2. The Pledroots of those mountains which mont Plateau rose above the sea long before the Coal Period (p. 2). The plateau slopes seaward, causing the streams to flow in short courses in the same direction.

Nearer the seacoast the country is a low



FIG. 64.



Coastal and then raised to form dry These plains, added ne country more rey, are known as the al Plains (Fig. 41). m New York to Alathe streams that flow from the Pied-Pall mont Plateau d its IDCO to the Coastal s have rapids and falls 3 they cross the dividne between these two. boundary is, therefore, the Fall Line (Fig. There are rapids and

long this line, because

reams have been able

more rapidly into the ayers of the Coastal Plains than into arder rocks of the Piedmont Plateau. ore white men came, the Indians

Fig. 66. - The Fall Line. Coastal Plains dotted, Piedmont and other sections left white. Cities printed in heavy type are located along the Fall Line.

of softer rocks, chiefly sands and clays. | their villages here, partly because of the were deposited on the sea bottom | water power, and partly because boats go-

ing upstream were stopped by the rapids and falls. Now many of these villages have become large cities. Note (Fig. 66) how many cities are on the Fall Line. Name them.

On the western side of the mountains is the Allegheny Plateau, which 5. The slope slopes gently west of the toward the mountains Ohio and Mississippi rivers. Near the mountains, in West Virginia and Pennsylvania, the rivers have cut deep valleys in this plateau; and it is therefore so rugged and rocky that it has attracted few

settlers, except near the rich coal beds that lie buried in the rocks.

You have already learned (p. 26) that

the Appalachian Moun- 6. Passagetains ways across the Were Appalachians at first a serious barrier to westward migration; but at the beginning of the last century many emigrants pushed their way across them. This migration greatly aided by the fact that several rivers, such as the Mohawk, Delaware (Fig. 67), Susquehanna, Potomac, and James flow across a part or the



Fig. 67. - Delaware Water Gap.

their villages on the streams along | whole of the mountain system. The early settlers also located rivers formed gateways to the fertile western plains beyond the mountains. Describe the course of each of these rivers, telling through what states it flows.

The map shows many lakes in New York, northern New Jersey, and Pennsylvania.

7. Effects of the There are also many waterfalls Great Glacier and rapids. Niagara (Fig. 68), on the boundary of New York, is the

grandest waterfall in the world; and two of the Great Lakes, which are also partly in New York, are among the largest lakes in the world. There are several other large lakes in this state. Name some of them (Fig. 64). As in New England, many of these lakes and waterfalls were caused by the Great Glacier. Trace its southern boundary in these states (Fig. 18). What about lakes and waterfalls south of that line?

In the Middle Atlantic States, as in New England, the sinking 8. Effects of the Of the land has caused numerous sinking of the large bays and fine Through these the harbors. tide often reaches far inland. In the Hudson River, for instance, it extends above Albany; and in the several branches of the Chesapeake Bay, it reaches nearly to the Fall Line. Most of the coast, unlike the rocky coast of New England, is low and sandy, with long, gently sloping beaches, where the bathing is excellent (Fig. 69).

The northern part of New York is in 45 degrees north latitude.

How far is that from the equator? From the north pole? How much nearer the equator is the southern part of Virginia?

While the climate of the northern part of the Middle Atlantic States resembles that of New England, that of the southern

portion is much warmer. Its greater warmth is due partly to the lower latitude, and partly to the ocean currents. The cold Labrador current does not extend south of Cape Cod, but the Gulf Stream passes very near the Virginia coast (Fig. 313).

The climate in Virginia is so mild that



Fig. 68. - A view of Niagara Falls.

sleighing and skating are rarely possible, while places near the entrance of Chesapeake Bay—such as OLD POINT COMFORT and NEWPORT NEWS—are important winter resorts. Among the mountains, however, the climate is cooler; and even as far south as Virginia and North Carolina there are cool summer resorts on the mountain slopes.



Photograph supplied by Pennsylvania Railroad.

Fig. 69. - Bathing on Cape May Beach, N.J.

winds of this section often blow from san, so that there is abundant rainfall ops and for the growth of dense. In most of these states, from forty r inches of rain falls every year.

y of the prominent industries in the Atlantic States are the same as those ing of New England. There are ted in-extensive forests in both the

Adirondack and Appalachian ains, as well as upon the Allegheny u. In the southern part, in and near Virginia, many hard-wood trees are; but in the northern portion, both ees and the methods of lumbering ale those in Maine.

LIAMSPORT, in Pennsylvania, is exaly engaged in the lumber busi-There are also many paper mills ed from the forests, as at WATER, near the Adirondacks. The sugar grows in New York and Pennsyl; and in most of the states tannic obtained from the bark of the hemroak.

: most of this section the woods have been so illy cut down that it is now necessary for the nent to protect those that are left. In several states there are forest reservations in which bidden to cut down the trees, or where only f the largest are cut each year. Besides this, rge tracts of woodland, called game preserves, efully protected by certain citizens, for the of fishing and hunting at the proper season. Fishing for cod and halibut is a much less important industry than in New England. It is too far to the Fishing Banks (p. 37) for many vessels to go there from the Middle Atlantic States.

Some vessels are engaged in catching mackerel, bluefish, and other ocean fish; and many shad are caught in the 1. Kinds of bays and rivers. This fish fish caught swims into fresh water each spring in order to lay its eggs, or spawn; and the young remain there until they are large enough to venture to the sea. It is while they are on the way to or from the spawning grounds that most shad are caught.

Oysters are found all the way from Cape Cod to the Rio Grande (Fig. 267); but one of the best places for them is 2. The oyster Chesapeake Bay, where the industry waters are warm, shallow, and quiet. From this broad, branching bay they are collected in great quantities, some being shipped away fresh in the shell, while many are canned, like fruit. Baltimore and Norfolk are especially noted for this industry.

When young, the oysters swim freely about; but after reaching a certain age, they sink to the bottom, fasten themselves to some solid substance, like a stone or an oyster shell, and never afterwards move from that spot. They depend for food upon what is brought to their mouths by the tidal currents.

Oysters live only in shallow water, and can sometimes be picked up by hand from a boat; but usually they must be dragged, or *dredged*, up with a longhandled rake. Small steamers and sailing boats are used for gathering them. Many men are engaged in the oyster industry, which is so profitable that there are many private oyster beds, which are carefully protected. Such beds are sometimes called oyster farms, or plantations. Young oysters are often brought here and put into the water to grow, as seeds are planted in a garden.

There is more good farm land in the Middle Atlantic States than in New England,

Agriculture

1. Where the farms are located

Plateau, and nearly all of New York, except the Catskill and Adirondack regions, are dotted with farms. There is also much

farm land in the broader valleys of the Allegheny Plateau, west of the mountains, and in the valleys which lie between the Appalachian Mountain ridges. Among the latter by far the most important is the *Great Valley* of Pennsylvania, Maryland, and Virginia.

Many of the farmers turn their attention chiefly to dairying; and, although butter and cheese are made in every

state in the Union, this work is especially important in New York.

The number of cows in a dairy herd (Fig. 70) varies from a dozen to several score. In summer they are allowed to graze in the pastures, but during the winter they are kept in large barns, where hay is fed to them. Twice each day they are milked, and, as in New England (p. 39), the milk may be sent to a neighboring city to be sold by the quart, or it may be kept for making butter or cheese.

UTICA, on the Mohawk River, is an important cheese market; and small cheese and butter factories, or *creameries*, are scattered over New York. They are common in the other states, also. These creameries

furnish a ready market for the milk, and are therefore of great value to the farmers near by; indeed, milk is even brought by train to some of the creameries.

The tobacco plant, which grows to a height of about three and a half feet, has large, thick leaves (Fig. 106), somewhat like those of the pieplant, or rhubarb. These leaves, which are the valuable part of the-plant, are plucked in the fall, hung in a room to dry, and then are ready for market.

The climate of most parts of New England and New York is too severe for this plant, but large quantities are raised in the Connecticut Valley, and in the valleys



Fig. 70. — A dairy herd in New York feeding in the pasture late in the Fall, after the first snow has fallen.

of southern New York, Pennsylvania, and states farther west (Fig. 256). Far the greatest amount of tobacco raised in the Middle Atlantic States comes from Virginia. In the vicinity of Lynchburg and Danville, where much tobacco manufacturing is carried on, immense quantities are grown; and Richmond and Petersburg, on the Fall Line (Fig. 66), are among the leading tobacco markets of the world. Find these cities on the map.

Both the soil and the climate of these states are well suited to the raising of fruits and vegetables. Nearly every farmer tables raises some of each. The (1) Sections important for these products

water, however, have the best climate for fruit. This is because the presence of water tends to equalize the climate, thus checking the danger from frosts.

One of the most noted sections for fruit is along the southern shores of Lake Erie in western New York. Here grapes in particular are cultivated (Fig. 71). Apples form another important fruit crop in New York, being grown in many parts of the state, but especially along the southern shores of Lake Ontario. There is so much fruit raising in New York that the nursery business, or that of raising young fruit trees,



Fig. 71. — Grapes on a vine in a vineyard in western New York.

vines, and bushes to sell, is a flourishing industry. One of the principal centers for this business is ROCHESTER.

On the Coastal Plains and Piedmont Plateau of eastern New Jersey, Delaware, Maryland, and Virginia, grapes, peaches, strawberries, apples, and other fruits flourish. Besides fruit, such common vegetables as potatoes, sweet potatoes, tomatoes, beans, and sweet corn are grown in the Middle Atlantic States.

There are so many large cities in these states that there is great demand for fruits

(2) The market and vegetables. In the early for them spring they are sent from the south in large quantities to the northern markets, being carried on fast trains; and

often in special cars. Many kinds are eaten fresh during the proper season.

The canning of fruits and vegetables for winter use has become an important industry in several cities, as in BALTIMORE and WILMINGTON. Many farmers are engaged almost entirely in raising crops for this purpose. Probably as many peaches, berries, tomatoes, etc., are put up in cans, as are eaten fresh. These canned goods may be seen in every grocery store. The fruits are prepared for use in other ways also; for instance, the juice of grapes is made into wine, and that of apples into cider and vinegar.

Besides the cattle necessary for dairying, many horses are raised in these 5. Other farm states. In some of the more products hilly sections, like western New York and Pennsylvania, there are many sheep. Hogs are raised on most of the farms; and also hens, ducks, and turkeys.

Among the most important crops of the Middle Atlantic States are hay and the grains, such as wheat, oats, corn, barley, rye, and buckwheat. Far more land is used for these crops than for those already mentioned. However, since the states farther west are even more noted for hay and grain, a description of this kind of farming will be given later, in connection with those states (pp. 93-97).

There are many more kinds of mineral products in the Middle Atlantic States than in New Eng-Mining land; and they are far more valuable.

One of these is salt, a mineral which is necessary to every one. In the early days salt springs were discovered at the point where Syracuse 1. Salt now stands, and that city owed its early growth to those springs. Little salt is now produced there; but large quantities of soda are made of brine obtained from the salt beds near by.

These beds of salt were deposited in the sea which covered this region before the Coal Period. They were later buried

beneath layers of rock, much as the coal beds were buried.

In the region south of Syracuse and Rochester, the salt beds lie deep in the earth, and from them salt is obtained at a number of places. In fact, New York produces more salt than any other state, with the exception of Michigan, which ranks first. Ohio and Kansas also produce large quantities.

When in the earth, salt is hard, somewhat like coal, and may be obtained in either one of two ways. By the one method a small hole is bored to the salt, and water allowed to run down and dissolve it; then the brine is pumped up and the water is evaporated by heat until only the salt is left (Fig. 72). By the other method a deep hole, or shaft, large enough for men to pass up and down, is dug down to the salt; then lumps of salt are broken off and hoisted to the surface. A salt mine is a beautiful sight with its clear, crystal white walls and clean floor.



Fig. 72.—The salt in these great piles was brought to the surface in brine that rose through wells bored down to the salt beds of central New York. The brine was then evaporated, leaving the salt.

Although there is little water power south of the region that the glacier covered, there is much coal—an excellent substitute. The coal swamps, that (1) Where existed millions of years ago (p. found
2), stretched from the ancient Appalachian Mountains westward beyond the Mississippi River. Most of the coal now found in this region is soft, or bituminous, coal, and enor-

mous quantities of it are mined (Fig. 78). In two or three places, however, as near WILKES-BARRE and SCRANTON, there are beds of hard coal, or anthracite. It is to this coal that these cities owe their importance.

Although much coal is mined in other parts of the country, the Middle Atlantic States are most noted for this mineral. About half the coal of the United States comes from Pennsylvania; West Virginia is second, and Illinois third, while Ohio produces a large quantity.



Fig. 73.— A miner digging out bituminous coal in a tunnel, far underground, near Pittsburg. The entire wall of this tunnel is solid coal.

Anthracite coal was once soft. Had it not been for the folding of the mountains, it would doubtless

(2) How anthracite coal was formed, and its mecial value

now be bituminous coal, like that farther west, near PITTSBURGH. But the pressure caused by the folding of the mountain rocks has changed it to hard coal. All woody matter, coal contains green, but in the

and even soft coal, contains gases; but in the anthracite these gases have been mostly driven off.

This has made anthracite coal harder and more difficult to burn; but since it gives forth a more intense heat than bituminous coal, and burns with less smoke, anthracite is preferred for some purposes, such as heating and cooking. Throughout New

Fig. 74.—A drawing to illustrate how coal is mined. There is a shaft going straight down, then tunnels extend off from it into the different coal beds.

England and many parts of the Middle Atlantic States, it is almost the only coal used for these purposes.

In some places the coal is found close to the surface, though in many others it is (3) Method several hundred feet beneath of mining the surface. Where the coal lies far down in the earth, deep shafts must be sunk to reach it. From the sides of such a shaft, tunnels (Fig. 74) are dug into the coal beds, and from these the coal is removed.

Usually there are several beds of coal, with thick layers of rock between, and the shaft extends downward through them all, with tunnels reaching out

into each of the coal beds (Fig. 74). In a large mine one may travel through miles and miles of tunnels. Since it is very dark so far underground, the tunnels are sometimes lighted by electricity; but the workmen often furnish their own light by means of lamps fastened to their caps.

The miners drill holes in the coal beds with drills run by steam or compressed air, and break the coal out by blasting; the larger lumps are then broken up with picks. After this is done, the coal is placed in cars, drawn to the shaft by mules, or by electricity, and then hoisted to the surface. The mules are kept underground for months, being fed and allowed to sleep in stables cut out of solid coal.

Soft coal is sold in the form that it reaches the

surface; but anthracite must first be sorted so that the lumps of one size are together. This work is done in great buildings, called coal

breakers, which stand close by the mouth of the shafts. The coal is hoisted to the top of the breaker, where the larger lumps are broken up. It then passes down through the building and is separated into different sizes by means of sieves and various kinds of machinery.

There is much rock mixed with the coal, and this must be picked out. Some of this work is done by machinery; but much of it is done by boys, called breaker boys, who sit on low wooden benches, as the coal passes by, watching carefully for pieces of rock. These they pick out and throw away. You can imagine how black they become before their day's work is done.

Both the hard and the soft coal are used not only for heating houses and for cooking, but also in making steam for use in running locomotives, (5) Uses of coal steamboats, and the machinery of factories. Much coal is used also in smelting iron and other metals, and in the manufacture of illuminating gas for use in lighting houses. Coal is, indeed, the most useful of all minerals. Without it, our country could not have prospered as it has. It is fortunate, therefore, that there is so much coal in the United States, and that it is found over so large an area.

In the rocks of the plateau along the

western border of the Appalachian Mountains, two other fuels, oil and natural gas, 8. Petroleum are often found. Petroleum, and natural gas as the oil is generally called, (1) Where found means "rock oil,"—a name which suggests its origin.

Formerly no region in the world produced so much oil as western Pennsylvania, West Virginia, and eastern Ohio; but now this region is rivaled by California and a part of the Gulf region in Oklahoma and Texas. Outside of the United States the only region in the world that approaches either of these in the amount of oil produced is in Russia, near the Caspian Sea.

Ages ago, when the layers of rock were being deposited on the ocean floor (p. 6), countless numbers of animals and plants, dying and dropping to the bottom, were imprisoned in the sediment and deeply buried. These then slowly decayed, forming oil and natural gas which entered the crevices between the grains of the sandstones and other rocks. Thus these substances have become stored deep down in the earth. Oil of much the same kind is now manufactured from fish; and nearly the same kind of gas may often be seen rising from swampy places, where plants are decaying.

When a hole is bored down to a rock layer where gas is thus stored, the gas (3) How obtained from the led away in pipes, often to distant places. Thousands of homes in BUFFALO, PITTSBURGH, and other cities are heated with natural gas; and in many factories, too, the gas is used for fuel.

Borings in which petroleum rises are called oil wells. From these the oil sometimes spurts, or gushes out; but frequently it must be pumped out. Near the oil wells cities have grown up, such as BRADFORD and OIL CITY in Pennsylvania, and OLEAN in New York.

After being taken from the earth, the petroleum is stored in large tanks and then (4) Products refined. In its natural state it from the oil is a thick, dark yellow or reddish yellow fluid; but in the refinery it is

changed so that a large part of it becomes clear, colorless kerosene oil.

Benzine, naphtha, and gasoline are also made from petroleum. The thick substances that are left, after the refining, are used in making dyes of various kinds, machine oil, vaseline, and paraffin. The latter is used in many ways; for example, in making chewing gum, and candles.

The oil business is mainly in the hands of the Standard Oil Company. From the wells the oil is led to the refineries in pipes (Fig. 75), sometimes hundreds of miles (5) Principal company handling, and the company owns many special tank cars for hauling the keroland oil

osene, as well as steamers for shipping it to foreign lands. Watch for one of the tank cars, and describe it.



Fig. 75. — A large pipe through which petroleum is flowing from the oil wells to the refinery.

Pennsylvania, West Virginia, and the other states mentioned enjoy a great advantage in having such an abundance of coal, oil, and gas for fuel. Iron ore is also found found, and why in New York, Pennsylvania, toportant Virginia, West Virginia, New Jersey, and some other states. Thus both the raw material and the fuel for manufacturing it into useful articles, are found almost side by side. Both coal and iron are easily sent to all the cities of the Middle Atlantic States for use in the factories. This is very important, since iron is the most useful of all metals for manufacturing.

In appearance, iron ore is sometimes a hard, black mineral; sometimes a soft, loose,

yellowish or reddish brown earth. It is not iron at all, any more than wheat is flour; it is only iron ore, a mineral out of which iron may be made by a great

deal of work.

Like coal, the iron ore in the earth was prepared long ago, though in a very different manner, as follows: Small quantities of iron exist in many minerals and rocks; indeed, the red and yellow colors of many soils, and of some rocks, are due to it. As water slowly works its way through the rocks, it dissolves the iron, much as it would dissolve salt or

and limestone than any other state in the Union. Pennsylvania leads all other states in the value of its building stone, and New York ranks third.

To obtain iron from iron ore, two materials, coke and limestone, are used. They are mixed with the ore and heated, and the process of getting out the iron is called smelting.

Manufacturing 1. Manufacture of iron goods (1) How iron is made

Coke is obtained from soft coal by burning it in stone or brick furnaces, called *coke ovens* (Fig. 76). There the coal is set on fire, and the ovens are closed,



Fig. 76. — Coke ovens near Pittsburgh. Each of the small doors leads to an oven where the coal is burned and changed to coke.

sugar if those substances were there. Where the conditions have been favorable, the water has brought quantities of the iron to one point, and there deposited it. This has formed beds, or veins, of iron ore, and it is these that are now being mined.

Sometimes the veins lie very deep, and the ore must be mined in much the same way as coal is mined (p. 55). Again the veins are so near the surface that the ore is taken out of great open pits, somewhat as stone is removed from a quarry.

Besides these valuable substances, there are many other minerals found in these states. Among them

5. Other mineral products are zinc, found in New Jersey; gypsum and graphite, or black lead, in New York; and a great variety of clays and building stones in all the states. Pennsylvania, for example, produces more slate, sandstone,

so that little air can enter. Indeed, so little air is let into the ovens that only a small part of the substances in the coal is burned. It is mainly the gases in the coal that are burned up or driven out, one of these being the common illuminating gas, already mentioned (p. 55). The solid part that is left forms very light, porous coke. This can then be burned and made to furnish intense heat, if supplied with plenty of air. It is this heat that is used to melt the iron ore.

Limestone is obtained from limestone quarries. It is valuable because it unites with the worthless part of the ore, forming a substance much lighter than iron, called slag. This is easily separated from the iron, and is thrown away.

In reducing iron ore to iron, more coke than ore is used, so that it is a special advantage to have the mines of coal and iron | and shipped away, to be made into thousands of The coke, iron ore, | different articles. ore near each other.

and limestone are all dumped together into a high, towerlike structure, called a blast furnace (Fig. 77). It is so named because a blast of air is forced through it, to produce a strong draft while the coke is burning. The great heat melts the ore and limestone, and the iron, being heaviest, sinks to the bottom of the fiery hot liquid. The limestone, united with those parts of the ore that are not iron, rises to the surface, forming worthless slag, which is drawn off through an opening in the furnace. Through a lower opening, the heavy iron is run off into trenches,

made of sand, on a sand floor.

There is one main trench with many side branches, and each of these has still smaller branches connected with it, as shown in Figure 78. When the molten iron



Fig. 77. - A blast furnace in which iron ore is changed to iron.

Some iron goods, such as stoves and the iron parts of your desk, are nothing more than this pig iron cools, the little bars of iron, called pig iron, are still | melted and cast, in molds, into the

shape that is desired. (2) The kinds of iron made This is cast iron,

which is so brittle that it easily breaks under a heavy blow. Other materials, such as knife blades, boiler plates, rails for railways, and watch springs are made of steel. This also is made of pig iron, though not until it has been melted again and greatly hardened and strengthened by an expensive process. Wrought iron, a third kind, is used where it is necessary for the metal to be tough and at the same time to bend easily, as in iron wire.

Almost every city in the Middle Atlantic States is engaged in iron (8) Centers for work of one kind iron manufacor another, some turing

in making iron and steel out

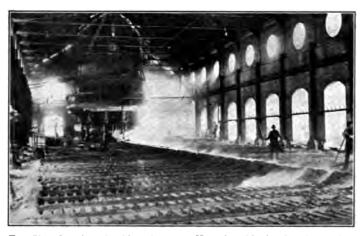


Fig. 78. - Interior of a blast furnace. Here the white-hot iron is running down a trench near where the men are standing, then into side branches, where it cools as pig iron.

attached to a larger one. These rough bars, which | of ore, others in manufacturing articles are small enough to be lifted, are then broken off out of iron and steel. For example, in New York State, BUFFALO manufactures car wheels, machinery, and many other articles. It has several thousand factories, many of them making iron goods. In New York City, iron and steel products of almost all kinds are made. Iron and steel goods, bicycles, etc., are manufactured in Syracuse; stoves are made in Albany and Troy; and there are iron foundries in BINGHAMTON, ELMIRA, and Schenectady.

In Pennsylvania, PHILADELPHIA manufactures steel ships, cars, and hundreds of other iron products; PITTSBURGH, to which ALLEGHENY is now united, makes steel and iron goods of nearly every kind (Fig. 79); and SCRANTON, READING, HARRISBURG,

they also need to buy clothes, shoes, etc., this one factory, by furnishing the money for all these purchases, helps to support farmers, storekeepers, shoe factories, railways, and many other industries. However, since it is the farmer who buys the implements, it is he who has really caused the factory to be built. Thus one is dependent upon the other.

Manufactories using three other mineral products are especially worthy of note. One of these is glass, which is made at and near PITTSBURGH, of glass, pot-WHEELING, and other places, tery, brick, and especially where natural gas furnishes cheap fuel. In the (1) Glass vicinity of the former city, there are sands which, when mixed with other substances, and melted, make an excellent quality of



Fig. 79. — Homestead Steel Works, one of the many iron and steel manufactories in and near Pittsburgh.

ERIE, ALTOONA, and a score of other places, have furnaces, foundries, and machine shops for iron manufacturing. In New Jersey, Jersey City, Newark, Camden, and Hoboken manufacture iron goods. In Delaware, Wilmington is noted for its cars and steel ships. In Maryland, Baltimore, like Philadelphia and New York, has a great variety of iron manufactures. Wheeling in West Virginia, and Richmond and Roanoke in Virginia, are also engaged in such work.

The importance of even a single manufactory is proved by the following facts: At the Osborne works in Auburn, New York, where farming implements, such as mowers, rakes, reapers, and harrows are made, over 2700 men have been employed at one time, making one complete implement every forty seconds. In a year these men and their families consume about 9000 barrels of flour, 62,000 bushels of potatoes, 200,000 dozen eggs, 1,400,000 quarts of milk, 375,000 pounds of butter, and 1,300,000 pounds of meat, besides much coffee, tea, and sugar. Since

glass. PITTSBURGH is the greatest center in the country for the production of plate glass.

In a number of places clay is found which is suited to the manufacture of pottery; but much clay for pottery is im- (2) Pottery ported. A high grade of pot- and bricks tery is made at TRENTON, N.J., where the pottery industry has become very important.

So many bricks are used for building, that brick yards are found in the neighborhood of nearly all cities. Bricks are made of clay, which is first pressed into the brick shape when damp, then dried, and finally baked. In this process some of the grains melt, so that when cooled again, they cling together like stone. The clays near Philadelphia, and the great clay beds of the Hudson Valley, above New York City, supply an abundance of brick for these and neighboring cities.

Portland cement has become of great importance within the last few years. It is made in many places, especially in New Jersey, Pennsylvania, and New York. To make it, limestone is ground fine and mixed with coal dust. The two are then placed in a furnace, where the burning coal dust gives out so much heat that the limestone melts. It comes out of the furnace as a kind of clinker, which is then ground into fine pow-

der for use. This cement has the valuable property of becoming hard like rock, or setting, when water is added. It is used for sidewalks, for buildings, dams, bridges, and many other purposes, taking the place of wood, stone, and iron.

In the Middle Atlantic States, as in New England, there are many 3. Other kinds of manufacturother kinds of ing manufacturing. For example, flour is made ROCHESTER; silk Paterson; shirts, collars, and cuffs at TROY; starch at Oswego; cotton goods at UTICA; boots and shoes at BINGHAMTON and Rochcarpets and hats ESTER; at YONKERS; and furniture at JAMESTOWN. Cotton and

woolen mills are found at a number of places, and the manufacture of clothing is of great importance in all the large cities. There is some manufacturing in nearly every town; and in the larger cities so many different kinds flourish that a score of pages would be required even to make a list of them.

Since the Middle Atlantic States, unlike New England, produce great quantities of Commerce coal and iron, as well as many 1. Its extent other raw materials, they have more manufacturing, and a much greater population, than New England. Trade and transportation of goods are, therefore, much more extensive industries here.

As in New England, the commerce is due, first of all, to the excellent harbors along the coast. Locate the three bays here: that is, New York Bay, Delaware Bay, and Chesapeake Bay. The most noted harbor of all is on the first, at the mouth of the Hudson River. The others are also very important, for

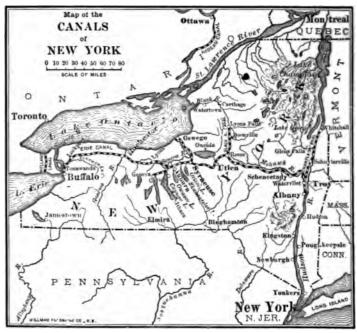


Fig. 80. - The Eric Canal and other water routes of New York and vicinity.

large vessels can ascend Delaware Bay as far as Philadelphia, and Chesapeake Bay to Baltimore and Washington. The mouth of Chesapeake Bay, as well as its branches, has fine harbors, such as that of Norfolk. Note the cities in that section, and observe how easy it is to reach Richmond, the capital of Virginia, by water.

Good harbors are of little use unless they can be easily reached from the 3. Connections interior. New York Bay is with the interior especially favored in this re- (1) By water

spect, for it is connected by water with the very heart of the fertile country to the west. This water way first leads northward up the Hudson River, where the



Fig. 81.—The first railway train which ran out of Albany.

ocean tide rises as far as Troy, just above Albany. Thus, good-sized boats can go as far as that point.

From near Albany, westward, the *Erie* Canal (Fig. 80) has been dug for a distance of three hundred and fifty miles, connecting

the Hudson River with Lake Erie at Buffalo. The canal follows the route formerly taken by the Indians, which is the easiest route from the Eastern States to the central part of the From Bufcountry. falo, lake boats are able to go to Cleveland, Detroit, Chicago, Duluth, and other ports on the Great Lakes. Thus by river, canal, and lake, New York harbor is connected by water with productive, thickly

settled country extending westward for more than a thousand miles. This is one of the most extensive and useful interior water ways in the world. Several shorter canals have been built in New York, as may be seen in Figure 80; point them out and explain their importance. The smaller lakes are also used for transportation. Locate some of them. A number of canals have been built in Pennsylvania.

as well as in New York; but there is no canal connecting Philadelphia with the Great Lakes, because the Appalachian Mountains and Allegheny Plateau lie in the way.

The Eric Canal is not nearly so important at present as it was at (2) By rail first, though it is now being enlarged to a barge canal. It is largely because the railways carry freight much faster, that the canal has lost

much of its importance. When the Erie Canal was dug, there were no railways; but when it was found that steam could be used for running locomotives, men began to build railroads rapidly.

One of the first and most important rail-



Fig. 82.—The Empire State Express, one of the trains of the present day on the New York Central Railroad. This picture was taken while the train was running at a speed of 90 miles an hour.

ways in the country was built in New York State (Fig. 81). This line, now called the New York Central, extends from the very heart of New York City along the Hadson

River to Albany, where it connects with Boston trains. From Albany westward to Buffalo the route is almost the same as that of the Erie Canal. At Buffalo the Central connects with railways leading to various points in the West. Several other railways connect New York with the West, some of them entering the city through tunnels under the Hudson River.

As in the case of New York, great trunk lines enter PHILADELPHIA. These connect it with the other cities of Pennsylvania, such

as HARRISBURG, the capital, and PITTSBURGH, as well as with the cities of the North, South, and West. Among these lines are the Pennsylvania Railway and the Baltimore and Ohio Railroad. Baltimore, Washington, and Richmond are likewise connected with the interior by important railways, the Pennsylvania and the Baltimore Ohio roads and passing through the former two.

The greatest of all the cities of the United States is New Principal cities

1. New York Cityand vicinity (1) Population habitants, and near New York is second only

to London among the great cities of the world. There are several other large cities near by, the largest being NEWARK, JERSEY CITY, ELIZABETH, PATERSON, and HOBOKEN (Fig. 89), all west of the Hudson River in New Jersey. Although in another state, they are so closely related to New York in business that they may almost be considered a part of New York City; so also may YONKERS, which lies up the Hudson just above New York City. Before it became a part of New York, the city of BROOKLYN, on Long Island, was itself fourth among the cities of the country. Probably more than six

million persons, or one fifteenth of all the inhabitants of the United States, live within twenty miles of New York harbor.

It is, first of all, the excellent opportunity for shipping that has caused so great a number of people to collect at this (2) Reasons point. Not only can goods be for this vast easily sent far inland by water population and rail, as already explained, but they can also be carried on the ocean to any port in the world. The harbor is deep enough for the largest vessels, and large enough to



Fig. 83. - Brooklyn Bridge, connecting Brooklyn and New York.

accommodate all that come. Thus it is the connecting link between the distant interior and distant ocean ports. More than half of all the foreign trade of the United States is carried on through this port, which is the leading shipping point in the New World.

The second reason for the vast population here is the fact that this is the greatest manufacturing center in the New World. The place from which goods are most easily shipped in all directions is, for that very reason, one of the best places for the location of factories.

Nearly every manufactured article that men need is made in or near New York, but one of the most



Fig. 84. - The high buildings, or skyscrapers, on the end of Manhattan Island.

tories of New England and other sections to be made into such articles as dresses, men's suits, and underclothing. Large buildings, in which hundreds of men and women are employed, are given up to this work alone.

Iron and coal are so near that the manufacture of iron goods is another great industry. The refining of petroleum is a third, the oil being led, in pipes, from the oil fields of western Pennsylvania to refineries in New Jersey, near the metropolis. The refining of sugar is anotherimmense business in and near New York, as at JERSEY CITY and BROOKLYN.

Being so important a ship-



-The Flatiron building, built with this shape because it occupies the corner where two streets come together. Stores or offices occupy every floor in this tall building.

extensive industries is the manufacture of clothing. | ping point and manufacturing center, mer-Cotton and woolen goods are sent here from the fac- | chants from all parts of the United States

come here to buy goods for their This stores. business, called wholesale the trade, is a third reason why so many people have collected around New York harbor.

At the southern end of Manhattan Island, on which much of New York is built, there are about eight square miles of the city given up almost entirely to the wholesale trade. Since the land is very expensive, as much use as possible is made of every square foot of it. For that reason the buildings are

high (Fig. 84). Many of the stores and office buildings are thirty or forty and one even fifty stories in height. Goods manufactured in the city, together with those that are brought from all parts of the world, are collected in this part of New York. Merchants in Denver, Louisville, St. Paul, Galveston, Indianapolis, and other cities come here to purchase these goods, in

order to sell them again in their own stores.

The contrast between life in New York City and upon a farm (p.93), is striking. On some of the streets scarcely anything but stores can be seen for ten or twelve miles, many of them being small, but some occupying enormous buildings, and employing many hundreds of clerks.

Families whose homes are in the city do not usually occupy a whole house, but often hundreds of people live in one building. Such a structure, called an apartment building, may be from six to eight stories high, and some are from fifteen to twenty. They are so arranged that one family occupies only a small part of one floor, called an apartment, or flat. Other families live above and below, as well as on each side,

being separated by only a few inches of brick or boards. Since land is so valuable, sometimes costing scores of dollars a square foot, there is usually neither front nor back yard.

In the poorer sections of the city the people are even more densely crowded. Some of the children have never seen the country, and scarcely any birds, trees, or grass, except possibly in one of the city parks. In these crowded sections there are many foreigners, from all the nations of the earth.

To escape such a crowded city life, tens of thousands of men live in suburban towns, or country homes, from ten to forty miles from their places of business. Every day they spend from one to three hours traveling back and forth. Some ride upon elevated railways built in the street, two, three, and four stories above the ground, and supported by iron

columns. Others go by train in the subway, which extends for many miles underground, and even crosses under the rivers to Brooklyn, Jersey City, and Hoboken.

How different all this is from the country, where only two or three houses may be seen at a time! Where sunlight and fresh air enter one's home from all sides of the building! Where there is plenty of room to play, with green grass, large trees, and singing birds in the yard! No wonder that people living in great cities are anxious to visit the country,

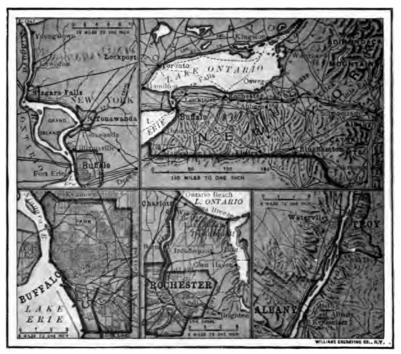


Fig. 86. - Map showing location of Buffalo, Rochester, and Albany.

the mountains, the lakes, and the seashore, during a few weeks in the summer!

Most of the other large cities in New York State are found along the water and rail route from New York 2. Buffalo and City to Lake Erie (Fig. 80). Cities along the The most important of these is Buffalo (Fig. 86), on Lake Erie, at the western end of the Erie Canal. Before the canal was built, Philadelphia was larger than New York, and Buffalo was only a village. But both New York and Buffalo have had a very rapid growth since 1825, when the canal was completed.

Since the canal (Fig. 87) is only seventy feet wide, and seven feet deep, all freight coming in lake steamers from the West, and bound farther by water, must be unloaded at or near Buffalo, and placed in canal boats. These clumsy looking boats are made with broad, flat bottoms, in order that they may carry heavy loads without sinking too deep into the water. They are drawn by horses or mules that walk along the towpath at the side.

Buffalo is a great railway center, as well as an important lake port. Here immense quantities of grain, flour, lumber, and iron from the West are transferred from lake



Fig. 87.—Locks in the Eric Canal. The canal boats are drawn into one of these spaces, which is then filled with water, raising the boat to a higher level. This is then repeated until the boat is raised to the level of the canal above the locks. Or, if a boat is going the other way, it is lowered in the locks by letting the water run out.

vessels to railways as well as to canal boats; and coal and manufactured goods shipped westward. There is also much manufacturing of many kinds (p. 59).

Niagara Falls (Fig. 68), which are about twenty miles from Buffalo, supply electric power for use in lighting the city and in running street cars and factories. Much use is made of this electric power near the Falls, as at the city of NIAGARA FALLS, which has become an important manufacturing center. The Niagara power is used for running electric cars between Buffalo and Niagara Falls and between Buffalo and

Lockport. This electric power is carried by wire even as far east as Syracuse. How far is that?

Name other cities along the Eric Canal route (Fig. 80), and recall what has been said about them. Notice especially LOCKPORT. At this point the land has a decided slope, so that the canal boats have to be raised and lowered, according to the direction they are going. This is done in inclosed parts of the canal, called locks (hence the name of the city), into one of which a boat enters (Fig. 87). Then, by turning in more water, or allowing some to run out, the boat is either raised or lowered at will.

A canal boat thus enters one lock after another until it is raised to the top of the slope if going west, or lowered to the base if going east.

New York State is prominent in education. Columbia University is located Education in in New York New York at State City; and ITHACA, in the central part of the state, is Cornell University, beautifully situated on the hillside above Lake Cayuga (Fig. 88). Both of these should be associated with Princeton University in New Jersey, and with Harvard and Yale universities in New England, as among the most important educational institutions in the country. North of New York City, on the

Hudson River, is West Point, the place where the government school for the training of army officers is located. At Pough-Keepsie, also on the Hudson, is Vassar College, one of the leading colleges for women, like Smith and Wellesley in Massachusetts, and Bryn Mawr near Philadelphia.

Largely on account of the enormous population of New York City, with its extensive manufacturing and great Rank of New wealth, New York is called the York State Empire State; for it ranks first in the Union in population, manufacturing, commerce, and wealth (Figs. 247 and 278).

The leading cities southwest of New | York as far as Richmond are located along

and neighboring (Fig. 66). The cities greatest of all is PHILADELPHIA (Fig. which has over 1,500,000 inhabitants, and ranks third among the cities of the United States. As in the case of New York, other important cities are near by, the largest being TRENTON and CAMDEN, in New Jersey; CHESTER and NORRISTOWN, in Pennsylvania; and WILMINGTON, in Delaware.

Lines of steamships (Fig. 89) run from Philadelphia to the leading seaports of the United States and foreign countries, carrying both passengers and

a multitude of products. Because of its nearness to the coal fields, Philadelphia has become a great shipping point for coal. The coal and iron have made possible the manufacture of cars, heavy machinery, and

woolen goods; there is much manufacturing of clothing; and in carpet manufacture this 8. Philadelphia the Fall Line. Name them | is the most important city in the country.



Fig. 88. - A view of Cornell University with Lake Cayuga in the distance.

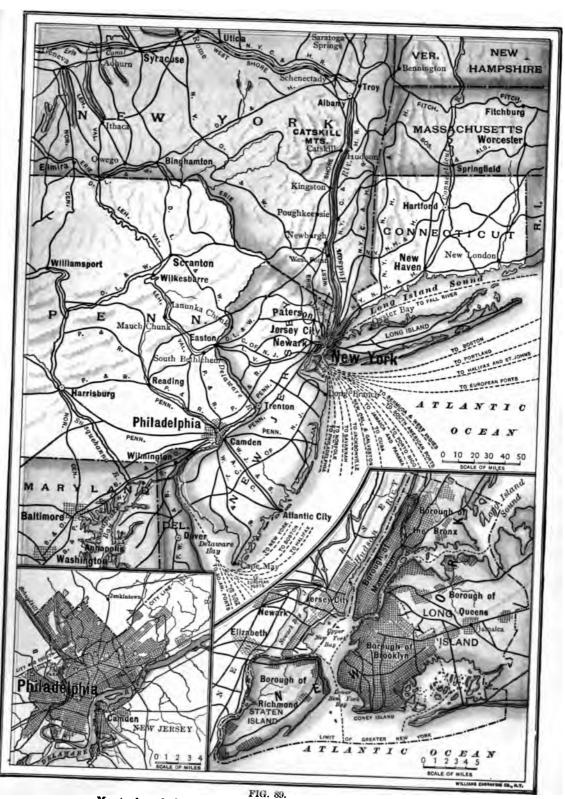
Philadelphia is called the Quaker City, because it was founded by William Penn and other Quakers, many of whose descendants still live there. It was the home of Benjamin Franklin; and at one time, be-



Fig. 90.—The Battleship Iowa going at full speed. This was built in the shipyards below Philadelphia.

steel ships (Fig. 90) at PHILADELPHIA and | WILMINGTON. Philadelphia is a great tex-

fore Washington was built, it was the capital of the United States. Independence tile manufacturing center, making especially | Hall, in which the Declaration of Independ-



Map to show the location of New York City, Philadelphia, and Baltimore.



ence was signed, and the Constitution of the United States drawn up, is still standing there (Fig. 91). The leading educational institution of the city is the University of Pennsylvania.

Pennsylvania has the city of ERIE, on Lake Erie, corresponding to Buffalo in 4. Other cities New York; but, while it is in Pennsylvania an important shipping and manufacturing center, it is much smaller than Buffalo. Two reasons for this are



Fig. 91. - Independence Hall, in Philadelphia.

that it lacks water connection, across Pennsylvania, with the Atlantic coast, and that it is not close to the eastern end of the lake. Goods from the Great Lakes that are bound for the coast are naturally carried eastward by water as far as Buffalo, before being transferred to the railroad.

The city in Pennsylvania which ranks next to Philadelphia is PITTSBURGH, to which Allegheny is now united, making it the eighth city in size in the United States. Located at the point where the Allegheny and Monongahela rivers unite to form the Ohio River, Pittsburgh has extensive water connections. It is a center for the manufacture of iron and steel, and articles made

from them. Indeed, it is the greatest center for such work in the country. Other cities in this locality, like WHEELING in West Virginia, being in the midst of the coal and iron region, are also extensively engaged in manufacturing.

At the head of Chesapeake Bay, in Maryland, is Baltimore, the seventh city in size in the United States. It has a good harbor, is connected with the West by trunk railways (Fig. 92), and easily receives coal from Pennsylvania, Maryland, and West Virginia. For these reasons it has become noted for manufacturing and shipping.

Baltimore is the seat of Johns Hopkins University; and a few miles south, at Annapolis, is the United States Naval Academy, which prepares officers for the navy, as West Point prepares them for the army.

Southwest of Baltimore, on the Potomac River, is the District of Columbia, where Washington, our national 6. District of capital (Fig. 92), is situated. Columbia This site was chosen for the capital long ago, when this was near the center of the settled part of the country. On Figure 246 you will find a star showing where that center is now. The District of Columbia does not form a part of any state, but is controlled directly by the national government.

Washington is unlike other cities in two respects. In the first place, since it was certain that it would one day be very large, it was carefully planned, with wide streets and many parks. For that reason it is more beautiful than most cities. In the second place, the people, unlike those of other large cities, are not chiefly interested in manufacturing and commerce. Here reside the President and his cabinet, members of Congress, and the foreign ambassadors and other representatives of the great nations Besides these there are of the world. many thousands of men and women at work in the different departments of the government. The chief buildings, therefore, are not factories and private offices, but government buildings (Fig. 93).

The mouth of Chesapeake Bay has already been referred to as the site of important har-

7. Cities of bors. The Virginia principal city at this point is Nor-FOLK, a manufacturing and shipping center for cotton, lumber, iron, and other products. It is one of the leading Southern ports, and has been advancing very rapidly. Near by is Portsmouth, where there are shipyards belonging to the United States. Shipbuilding is an important industry at NEWPORT NEWS, also.

The winter climate in this section is so mild that many people from the North go there for the winter season. Norfolk, Newport News, and Old Point Comfort are popular winter resorts.

The largest city of Virginia is RICHMOND, the capital of the state, at the head of tide water on the James River. It is important as a tobacco market, and as a rapidly growing manufacturing center. Other prominent cities in the state are ROANOKE, LYNCHBURG, and DANVILLE.

1. What mountains are there in the Middle Atlantic

Review
Questions
States, and in what parts are they?
2. What are the surface features east of the mountains? 3. What is meant by the Fall Line, and why is it important? 4. What facts can you give about the

slope west of the mountains? 5. What rivers have cut passageways across the Appalachians? Of what importance are these gateways? 6. State the effects of the Great Glacier on this group of states. 7. The effects of the sinking of the coast. 8. Describe the

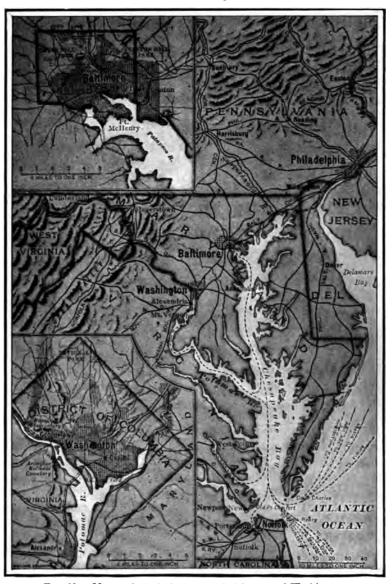


Fig. 92. — Map to show the location of Baltimore and Washington.

climate. 9. Tell about the lumbering and related industries. 10. What kinds of fishing are there? 11. What about the oyster industry? 12. Where are the best farming sections? 13. What can you tell about the dairying? 14. About the tobacco

industry? 15. What sections are noted for fruits and vegetables? 16. What about the market for these products? 17. What other farm products are raised in these states? 18. Where is salt found? How is it obtained? 19. Where is coal found? 20. How was anthracite formed, and what is its special value? 21. Describe the method of mining coal. 22. Of preparing it for market. 23. In what ways is coal used? 24. Where are oil and natural gas found? 25. How have these been formed? 26. How are they obtained from underground? 27. What products are made from the crude oil? 28. How is the oil handled? 29. Where is iron ore found in these states, and why is it a very im-

portant? 30. Describe it; also, tell was formed and how it is mined.

50. For what are Philadelphia and neighboring cities important? 51. Name and locate other cities in Pennsylvania. 52. State the principal facts about Baltimore. 53. Where is the District of Columbia? For what is it important? How does Washington differ from other large cities in the United States? 54. Name and locate the larger cities of Virginia. What can you tell about each?

New York (N.Y.). 1. Where are the mountains?
2. What are their names? 3. Why are forests extensive here? Why is there little agriculture among the mountains?
4. What about the surface features of the rest of the state? 5. What about the extent of agriculture? 6. Tell about the dairying. 7. What fruits are important in New York, and where are



31. What

Fig. 93. — The National Capitol Building at Washington.

these states? 32. How is iron made from ore? 33. What are the kinds of iron? 34. Name and locate the principal iron-manufacturing centers. 35. What can you tell about the manufacture of glass? 36. Pottery? 37. Brick? 38. Cement? 39. What other kinds of manufacturing are there? 40. What about the extent of commerce in these states? 41. Where are the harbors? 42. What connections are there with the West by water? 43. By rail? 44. What is the population about New York harbor? 45. Give several reasons for so great a population here. 46. Describe life in New York City. 47. Why are there so many cities along the Eric Canal? Locate each. For what is each important? 48. Name and locate the leading educational institutions in New York State. 49. What is the rank of New York as a state?

boundary of the state? 9. Into what rivers do the lakes empty? 10. What rivers drain New York? 11. State clearly the importance of the Eric Canal. 12. Which cities mentioned in the text are on the canal? Which are on the Hudson? 13. Compare New York in size with all of New England. 14. Draw a map of New York like that of Maine (p. 47). When studying each of the other states, do the same for it.

New Jersey (N.J.). 15. Why should peaches and grapes grow better in New Jersey than in New England? 16. Name and locate each of the cities mentioned in the text. 17. For what is each important? 18. In what ways are some of the largest cities dependent upon the products of Pennsylvania? 19. Add together the populations of all the cities within about twenty miles of New York.

Pennsylvania (Pa. or Penn.). 20. Where would you look for the best farm land? 21. The principal forests? 22. The leading coal mines? 23. Where are the principal cities? Why located where they are? 24. Why are there fewer lakes in Pennsylvania than in New York? 25. Should you expect to find fewer waterfalls also (p. 50)? 26. Why, then, is manufacturing so important in this state? 27. What kind of manufacturing is especially important? Why? 28. What advantage do you see in the position of Pittsburgh? 29. By or through what states would one pass in going by boat from Pittsburgh to the Gulf? (See map, Fig. 40.) 30. Measure the length and width of Pennsylvania. Also find its area (Appendix, p. 426). 31. Is Pennsylvania larger or smaller than New York? Virginia? New England? 32. Is it larger or smaller than the state you live in? How much?

Delaware (Del.). 33. Which is the principal city in this state? 34. For what is it noted? 35. Why is it especially well situated for that industry? 36. Compare it with Albany in size. 37. The principal industries of the state are fruit raising and farming. What two reasons can you give for this fact?

Maryland (Md.). 38. In which section is farming most important? Why? 39. What products can you expect from the mountains? Why? 40. Notice how branching Chesapeake Bay is. Why is it so irregular? 41. What influence must this have upon the number of oysters found there? 42. Why is Baltimore favorably situated for receiving coal and iron from Pennsylvania? 43. For canning fruit, vegetables, and oysters? 44. What might be the effect upon the growth of Baltimore if the land should rise, so that Chesapeake Bay disappeared and the Susquehanna flowed through it? 45. Compare the size of Baltimore with that of Boston.

Virginia (Va.). 46. In what other state is the capital the most important city? 47. Locate the fertile Great Valley that is found in Virginia (Fig. 92). 48. What kinds of agriculture are carried on here? 49. What river separates Virginia from Maryland? What river crosses the middle of Virginia? 50. Compare Richmond in size with Albany. 51. How does Virginia rank in iron production (Fig. 270)? 52. Of what importance are the branching bays that enter Virginia? 53. If goods are to be shipped across the ocean from Kentucky (see map, Fig 40), is it nearer to send them to Norfolk or to New York?

West Virginia (W. Va.). 54. What disadvantage is it to this state that it has no seacoast? 55. How could we reach the ocean by water from West Virginia? 56. Where is the largest city? Why there? 57. How does this city compare in size with Pittsburg? 58. Should you expect to find much forest in this state? Why? 59. Much farming? 60. Coal,

iron, petroleum, and natural gas are found here. Of what value are these? 61. What mountain range lies on the eastern boundary?

62. Describe the surface features of this group of states from the relief map (Fig. 65). 63. Describe the differences in climate in the different parts. 64. State the principal industries of the Middle Atlantic States. 65. Make a list of the ten largest cities. Add their populations together, and compare the result with the ten largest in New

England. (See Appendix, pp. 427-428.) 1. Collect pictures of Niagara Falls. 2. Examine a live oyster, or clam, to see what holds the two parts of the shell together. What is the use of the shell? 3. Find where the canned fruits and vegetables in a neighboring grocery store have come from. 4. Make a collection of the kinds of coal for the school; of some coke and iron ore. 5. In small bottles collect products made from petroleum. 6. Collect samples of cast iron, wrought iron, and steel. 7. Estimate, by use of the map (Fig. 40), the distance by water from New York City to Duluth. 8. Visit a canal and examine a lock. 9. Make a toy canal having a lock in it. 10. Give reasons why freight rates are cheaper on canals than on railways. 11. Can you give a reason why the Erie Canal should have reached to Lake Erie instead of to Ontario? 12. Write. composition, giving the reasons why one might prefer to live in a large city; or in the country. 13. Collect pictures of scenes in a large city; in the country. 14. Make a drawing of these states, including the principal rivers and cities. Locate the capitals.

4. Southern States

1. In what three parts of this section are there mountains? 2. What are the names of the mountains? 3. Which states have none?
4. What are the principal tributaries Map Study to the largest river? 5. Through or on the borders of what states would you pass in going by water from New Orleans to Chattanooga, in Tennessee? 6. What natural boundaries do you find for this section? 7. Compare the coast with that of New England. Why the difference (p. 12)? 8. Why are there so few lakes (p. 9)? 9. The rivers that rise in western Texas — as the Colorado — are often quite dry in the western part of their course. Why (p. 30)? 10. Name the states in this group. 11. Find the capital of each. 12. Which of the states have a seacoast? 13. Which have none? 14. Which border the Mississippi? 15. Which drain into that river? 16. What reasons can you suggest for the fact that the largest city is near the mouth of the Mississippi?

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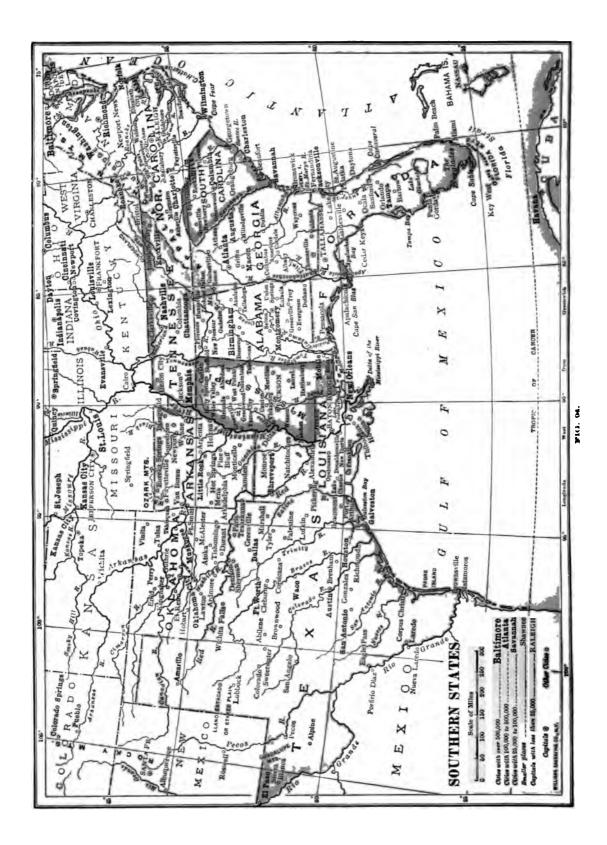




Fig. 95. - Relief map of the Southern States.

Figure 94 shows that the Appalachian

Surface Mountains continue southwestfeatures ward as far as Alabama. In

1. Resemblance of northeastern part to the country farther north

North Carolina and eastern Tennessee they

are much higher (Fig. 96). In fact, the highest peak east of the Mississippi River is Mount Mitchell in North Carolina. It rises 6711 feet, or 432 feet higher than Mount Washington in New Hampshire.

East and southeast of the Appalachians the surface features resemble those of the Middle Atlantic States. First there is the

Piedmont Plateau, which slopes gradually from the base of the mountains, where it is about 1000 feet above sea level, to the Fall Line. Trace this line in Figure 66. The Coastal Plain begins at the Fall Line at an elevation of 100 to 500 feet, and slopes gently toward the sea. It includes all of Florida, as well as parts of several other states. Name them.

As in Pennsylvania and West Virginia, there is a rough plateau along the western base of the Appalachians. As in those states, also, this plateau is



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Fig. 96. — Asheville, situated in a valley among the high mountains of western North Carolina.

deeply cut by the river valleys, and is so rugged that it is still covered by extensive forests and has few inhabitants. It gradually becomes lower and more regular farther west, until it merges into the broad and fertile plains of the Mississippi Valley.

The mountains and plateaus just mentioned include only a small part of the S. Level character of most of der consists mainly of plains this region (Fig. 97). The Coastal Plain extends westward along the coast of the Gulf

of Mexico, and is very level. So also are the delta and flood plains of the Mississippi River. These plains rise toward the north and west until they merge into the plains and prairies that lie between the Appalachian and Rocky Mountains. Toward the north they reach no great height, but in western Texas they become high plateaus, from 4000 to 5000 feet above the level of the sea. This plateau region is a part of the Great Plains of the West.

In only a few places are these vast plains broken by s. where the mountains. In mountains are northwestern Arkansas, for instance, are the low Ozark Mountains; and

southwest of these is the mountainous country of eastern Oklahoma. From here low mountains extend, with some breaks, to the central part of Texas. In the extreme western part of Texas, also, low spurs of the Rocky Mountains are found. Aside from the Appalachians, and these few small mountainous areas, the surface of the Southern States is mainly made up of plains, which are usually very level.

The coast is much more regular than 4. The coast that of New England. Give the reason for this as stated on page 12. There are numerous bays,

but none so large as Chesapeake Bay and other bays in the North. Sand, drifted by waves and currents, has been built into sand bars, which often partly shut in the bays, and thus make the coast more regular.

The irregular coast of southern Florida is due to the work of coral polyps, which live in countless millions in the warm waters of the Gulf Stream (Fig. 313). These polyps have built the limestone rock of which the southern part of the Florida



Fig. 97.—A view in the Southern States. Much of the land is as level as this. The crop raised in this field is the peanut, which the boys and girls are picking from the roots of the peanut plants.

peninsula is composed. They have also made the many reefs and small islands, or keys, that lie just south of Florida.

The low plains of the Southern States lie so far south that the climate is everywhere warm, and the damp sea winds bring an abundant rainfall to most parts. During the cold, disagreeable Northern winter, the weather in the South is mild, like spring and autumn in the North. Flowers are in blossom and birds are singing, many of the birds being Northern species, that have migrated there for the winter. Large numbers of Northern

people also go South to spend the winter. Among the principal winter resorts in Florida are Jacksonville, Tampa, and St. Augustine, one of the early Spanish settlements.

The climate is cooler in the mountains, where there are many pleasant summer resorts, as in the mountains of the Northern States. The best-known mountain resort is ASHEVILLE, in North Carolina (Fig. 96).

The western part of Texas has a different climate from the other parts of the South;



Fig. 98. — A view at Miami in Florida, showing the palms and other vegetation of a warm climate.

for it is too far from the sea to be reached by damp winds, and therefore receives little rain. As one travels westward from the Gulf of Mexico, he finds first dense forests; then come plains with scattered trees, especially the live oak; beyond this are broad prairies without trees, but with extensive cotton fields. Next a section is reached which is too dry for cotton; and this country, fitted only for ranching, stretches westward for several hundred miles.

The South is now the greatest lumber section in the country. There are immense tracts of forest on the Coastal Plain, on the

river flood plains, and among the mountains. Among the forests are many trees either unknown or uncommon in the North, some of them, such as the magnolias, bearing large, sweet-scented flowers.

Another is the live oak, whose green leaves remain on the tree all winter, and whose hard wood is highly valued for shipbuilding.

The long-leaved or hard pine, often called the *Georgia pine*, is a very valuable wood, and is much used for floors. This lumber is sent to all the cities of the North. It is

shipped from the coastal cities of Charleston, S.C., SAVANNAH and BRUNSWICK, Ga., JACKSONVILLE and PENSACOLA, Fla., and MOBILE, Ala., as well as from other seaports.

While the pine thrives on the low, sandy plains, the hardy oak and other valuable hard-wood trees are found upon the plateaus and upon the mountains (Fig. 99). Quantities of hard wood are shipped from MEMPHIS and from other points.

The method of lumbering in the South is very different from that of New England (p.34). In the South there are no heavy snows

to level up the uneven ground and to cause floods in the streams. Therefore, logs cannot be floated down to tide water by means of spring freshets. On this account the sawmills are located in the midst of the forests, if possible on the river banks. To them the logs are brought, either by water, by wagon, or by train (Fig. 100), and then sawed into lumber.

In this section there are no fishing banks where such food fish as cod and halibut live. But in the rivers, along the coast, and in the bays, are excellent food fish which are caught mainly for use in the South.

There is also extensive oyster fishing in the shallow bays, as in Mobile Bay, for instance; and in southern Florida there is sponge and turtle fishing. The sponge grows in the warm, shallow waters of the coral reefs; and the immense sea turtle swims

about on the surface of the ocean. The alligator, whose skin is made into the valuable alligator skin leather, is also found in Florida.

With its fertile soil and favorable climate, the South has naturally become a great agri-

cultural country. Agriculture It is far better 1. Its rank as suited to farming an industry than either the Middle Atlantic or the New England States. Many people are engaged in other occupations, it is true, but farming is the leading industry.

The crop that exceeds every other in value, in the South, is cotton. The early 2 Cotton (1) Its relation colonists soon disto slavery covered that cotton could easily be raised here, and that there was a ready market for it abroad. The cotton fields, or plantations, were very large, and there was a vast amount of work in planting and picking the cotton, and in separating

the fiber from the seed. This called for a great many laborers, — far more than could be found there.

In those days it was common for people to own slaves, and negro slaves were offered

with the spread of slavery in the Southern States.

In 1910 the Southern States produced about 11,400,000 bales of (2) The amount cotton, each weighing a little produced



Fig. 99. - Lumbermen at work cutting hard-wood logs in the mountains of western North Carolina.

Of this, about 8,000,000 over 500 pounds. bales were shipped abroad, especially to The remainder England. was manufactured at home, mainly in New England In the same year the entire and the South.

world produced a little less than 20,000,000 bales, which makes it clear that the United States furnishes much more than half of all the cotton grown. Since so much of the clothing worn by men and women of all nations is made of cotton, we see that one of the chief industries of \mathbf{the} Southern States is to help clothe the peoples of the world.

Cotton requires a rather fertile soil and a long, warm summer. These conditions exist throughout the region (8) The climate marked as the cotton belt in cotton requires it came about that cotton had much to do | Figure 253, but they are wanting in the



Fig. 100. - Lumbermen loading logs on a train in the forest of eastern North Carolina

for sale in many parts of the world. Since they were found to be well suited for work in the cotton fields, they were brought to our country for that purpose. In this way

Fig. 101. - Picking cotton on a Southern plantation. The white, woolly

cotton is seen on the plant in the lower right-hand corner.

North, where the summers are altogether too short.

The cotton seeds are planted in the spring, in rows about three feet apart, and the weeds are kept out until the plants are nearly grown.

(4) Method of These reach a height of two or three raising and feet, and large blossoms appear that marketing it produce a pod, in which the cotton and cotton seed are contained. When ripe the

ance the downy substance in the thistle, or in the pod of the milk-weed (Fig. 101). When a great number of these pods have opened, a cotton plantation presents a beautiful sight, — much like a field flecked with snow (Fig. 102). Then the busy season for the pickers begins. As many as two or three hundred men, women, and children may assemble in one field, carrying bags to be filled with cotton, sing-

pod bursts open, making a white, woolly ball,

known as cotton, which resembles in appear-

ing and chattering the livelong day.

When plucked from the pods, the cotton is attached to seeds, and these must be removed before the cotton can be of use. The seedless cotton is tightly pressed into bales

which are covered with coarse jute bagging, bound with iron bands, and shipped away to the warehouses, to be sold.

Sugar cane is a second important crop that is confined to our Southern States.

There are a number of plants from

whose sap sugar is made. 3. Sugar cane One of these, the sugar maple, and sugar (1) Plants from has already been mentioned which sugar is (p. 41); another is the sugar obtained beet, raised in great quantities in Europe, and also, of late, in many of our

This beet is now a very important source of sugar, because it can be raised in

a cool, temperate climate. For a long time, however, the principal source of sugar has been the sugar cane, a plant that looks somewhat like corn (Fig. 103).

Sugar cane requires a fertile soil, and grows only in warm regions where there is little or no frost, even in winter. (2) Where sugar

For this reason cane is grown most of the cane sugar comes from tropical lands, such as the Hawaiian Islands, the Philippines, Porto Rico, and Cuba (Fig. 255). In our own country the most noted

> sugar district is the delta of the Mississippi River in Louisiana; but sugar raising is increasing in importance in Texas

and Georgia.

Some of the plantations in these states have several

The cane is planted either in the fall or spring, in rows about six feet apart. The stalks grow in the summer to be two or more inches in diameter, and reach such a

height that a man riding through a field on horseback may be entirely hidden from view. The cane is ready to be cut in the fall, after the middle of October. As soon as the stalks are cut, they are drawn to

the sugarhouse in wagons, or, on the larger plantations, in railway cars (Fig. 104).

In the sugarhouse the cane is ground between rollers in order to squeeze out the The waste cane, left (4) How the after the juice is pressed out, sugar is is used as a fuel to run the obtained engines of the sugarhouse; the juice or

thousand (8) How it is acres in cultivated sugar cane.

sap is placed in large vats and warmed to evaporate the water in it and to crystallize the sugar. This leaves two products, a thick black molasses and brown is one of the most important foods in the

sugar. Some large sugarhouses produce as 14,000,000 much as pounds of sugar in a year.

 \mathbf{T} he crude, brown sugar is sent from the sugarhouse to some refinery, either in New ORLEANS or in the North. At the refinery it is changed to white sugar, from which the various grades of granulated, powdered, and lump sugar are made. In changing the brown to the white sugar,

burned bones, called boneblack, are used to filter out the impure parts. The bones are

and is not of great value to the sugar raiser.

Rice, a third valuable crop in the South,



Fig. 102. — A cotton field on a Southern plantation in the picking season.

world; it is, in fact, the chief food of some nations, such as the Chinese. 4. Rice obtained from Chicago, and elsewhere, where large numbers of animals are killed for meat. It is not eaten so extensively (1) Its importance as a food

consume large quantities, far more, indeed, than we raise.

One reason why we have raised too little rice for our use, is that we (2) Why we have not had the may raise more proper conditions in the future for its growth. Rice requires a warm climate and a damp, even swampy soil. The climate is suitable in many parts of the South, but the wet soil is not so common. On the Coastal Plain and river flood plains, from the Carolinas to Texas, there is some such

land, and there rice culture has long been carried on, the principal districts being South Carolina and Louisiana (Fig. 105).

Recently the area of rice production has



Fig. 103. - Cutting the sugar cane on a plantation in Louisiana.

The molasses is used for various purposes, some of it being manufactured into sirup and molasses for the table, and some of it into rum. Molasses is a byproduct, like sawdust in a lumber mill, been greatly increased by irrigation. By g the water from streams, or springs, been found possible to make the soil t as necessary even on some of the well-drained plains. With irriganice culture may be carried on over

upon the top of which appears a head of seed somewhat resembling a head of oats. Shortly before the harvest season the water is drawn off, so that horses may be used in harvesting the crop. The rice is then cut and the kernels threshed out, as in the case of wheat (Fig. 105). After the hull is removed, the

grains are sent to New Or-LEANS, GALVESTON, SAVAN-NAH, OF CHARLESTON, to be polished, after which they are ready for market.

Unlike cotton, rice, and sugar cane, tobacco is not confined to our

Southern States. Yet it is naturally a Southern plant, and is raised in the North in only a few places where conditions are especially favorable. Virginia and Kentucky, where tobacco is a very

important product (p. 52), have a milder climate than the rest of the Middle Atlantic States. Tobacco is cultivated in all the Southern States, but most of all in Tennessee (Fig. 106) and North Carolina. CLARKSVILLE, Tenn., and DURHAM, N.C., are centers for trade in tobacco. Name some Virginia cities likewise engaged in the tobacco trade.

Fruits, such as strawberries, watermelons, apples, peaches, pears, grapes, 6. Fruits and and oranges, flourish in the vegetables



.—Carrying the sugar cane to the cars which will take it to the sugarhouse.

A scene on a Louisiana plantation.

of the warmer part of the South. day, therefore, our country may suple the rice we need, and even have to spare. Louisiana, Texas, and Arproduce most of the rice now raised country, though some comes from Southern States.

hod of ing and ug for as the planted, the fields are flooded.

As the plant grows, it forms a slender stalk, from three to six feet high,



Fig. 105. — Threshing rice on a large rice plantation in Louisiana.

warm climate of the Southern States; so do vegetables, such as peas, beans, potatoes, sweet potatoes, and tomatoes. All these ripen earlier than in the North.

Florida is so far south that it has fruits of an entirely different kind. Besides oranges (Fig. 107), there are lemon and grape-fruit groves in many parts of the state. In southern Florida the climate is so warm that even tender tropical plants, such

as cocoanuts and pineapples, thrive there. The pineapple plant, whose fruit is nestled in the midst of sharp-pointed leaves, grows especially well on the low coral keys and reefs that fringe the southern tip of Florida.

Fruits and vegetables from the South are sent in great quantities to the North, where they appear in the markets early in the spring. The oranges are sent throughout the winter. Thousands of bushels of fruit and vegetables are shipped at one time, by fast train or steamer, and at the proper season one may even see a whole train load of strawberries. Quantities of fruits and vegetables are canned in the South.

Many other crops besides

those named are raised in the 7. Other farm South, corn, products wheat, and hay being among the most important. An immense quantity of corn is produced (Fig. 108), and over even a wider area than cotton itself; but since corn and wheat are raised even more extensively in other states, these grains are treated later (pp. 95 to 97).

Peanuts and sweet potatoes are two valuable products of these states. Stock of various kinds, such as horses, cattle, sheep, and hogs, is also raised, each plantation usually having some of these animals. Large numbers of cattle are also reared in the open

pine forests of the Coastal Plains, especially in Florida and Georgia.

An important draft animal in the South, well suited to the warm climate, is the mule. On the fertile plains, especially in Tennessee, Missouri, and Kentucky, there are stock farms where particular attention is paid to raising mules and fine breeds of horses.

In the western part of Texas, where there is little rainfall, grazing is the chief industry. The climate 8. Ranching



Fig. 106. - A field of tobacco in Tennessee.

is so dry that the grass cures, and becomes hay, while still upon the ground, making excellent food for cattle (Fig. 109) and sheep. One may travel for miles over the plains of western Texas, seeing little else than a ranch house here and there, with an occasional herd of cattle or sheep, and cowboys riding to and fro.

While there is no reason for large cities here, and the life of the cowboys and sheep herders is a lonely one, it is their work that helps to supply our tables with meat, and to us our woolen clothing and our shoes.
in how hundreds of New England
ies depend for their daily meat upon
roducts of these distant lonely ranches.
dependent people are upon one

dependent people are upon one er! ere is a great variety of minerals in the

i; but here, as in the North, the most important of all are coal and and iron iron ore. One fourth of the of the country, and about one ninth of

Fig. 107. — An orange grove near Jacksonville, Florida.

on ore, now come from the states south nasylvania.

al and iron ore are found among the tain ranges, and in the Appalachian au, all the way from Pennsylvania to ma. They are mined in several places, ear CHATTANOGA in eastern Tene; but most noted of all is the district id BIRMINGHAM, Ala., near the expouthern end of the Appalachian m. This region is so rich in coal and that it now ranks as the second iron-

producing section of the continent; and in coal production Alabama ranks sixth among the states of the Union. The Birmingham region is especially favorable because iron ore, coal, and limestone, the three materials necessary for the production of iron and steel (p. 57), are found there close together.

Coal is obtained not only in the Appalachian Mountains and Plateau, but in central Texas and Oklahoma. There are also

iron ore and other minerals here. Beneath the plains bordering the Gulf of Mexico, from the Rio Grande to Georgia (Fig. 268), there is much brown coal, or lignite. This is not so good as the bituminous coal of the Appalachians, but it is valuable, and can be used for many purposes.

There is not much natural gas produced in the Southern States, though it is found in several of them. The greatest quantity comes from Oklahoma. Petroleum, however, is of very great importance. Vast quantities have been found in Texas and Louisiana, near the Gulf of Mexico, and this is now one of the most noted oil regions in the world. Much

is also found in Louisiana, and some in Tennessee.

There are valuable deposits of granite in several of the states, especially North and South Carolina, Georgia, Arkansas, and Texas. Excellent sandstone for building, and limestone for various uses, are also widely distributed. Among the important uses of the limestone here, as in the North, is the manufacture of Portland cement (p. 60).

There is much beautiful marble in Texas, Georgia, and Tennessee. The Georgia marble is widely known for its great beauty; and near Knoxvilla,

in eastern Tennessee, marble of different colors is quarried (Fig. 110). What city in Vermont is likewise noted for marble (p. 36)?

Clays of fine quality for bricks, tiles, etc., are found in many places; and there are also deposits of clay suited to the manufacture of high-grade pottery.

The soil of farms often becomes worn and out 4. Phosphates needs a fertilizer. There are various kinds of fertilizers, such as manure and bone dust, which furnish the plant food needed by crops; but one of the most important kinds is mineral This is phosphate. found in great quantities in Florida, Tennessee, and South Carolina; and from these states much of our phosphate is now obtained. Besides be-



Fig. 108.—A field of corn in Arkansas. Notice how very tall the corn grows in this warm climate.

sonville, and Tampa for use on farms in the North.

The phosphate is a de-

JACK-

CHARLESTON,

The phosphate is a deposit in which are found fossil remains of many animals, such as the teeth of sharks, and the bones and teeth of many large land animals, such as the huge mastodon, which once lived in this country.

The South produces a variety of other minerals Salt, for instance, is eral products Texas and Louisiana Bauxite, the mineral from which aluminum is made, is found in Georgia, Alabama, and Arkansas. Gold is mined in North and South Carolina, Georgia. and Alabama; silver in Texas and Tennessee; and copper in Tennessee. Some precious stones, such as the sapphire and the diamond. are also found. The South is, therefore, a rich mineral region, and the mining is rapidly growing in importance.

ing used in the South, it is shipped from | Before the Civil War there was little



Fig. 109. — Cattle on a ranch in western Texas.

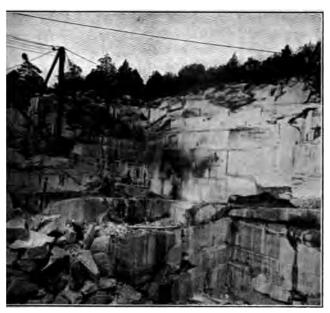


Fig. 110. — A marble quarry near Knoxville, Tennessee.

acturing in the South. The negroes, id most of the hand labor, lacked the cturing training necessary to handle machinery; and the raw materials were shipped away, while manufactured articles brought back. Thus cotton went to nd, New England, and elsewhere, some o be returned in the form of cloth; mber was shipped to various Northern

often to be sent back in orm of furniture. Very iron ore or coal was mined se days.

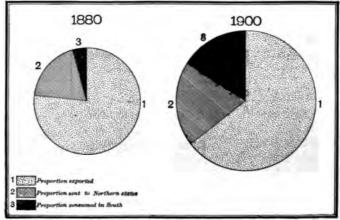
es situation is now greatly ed (Fig. 111). Indeed, lvance made in manufaction, since the Civil War, has wonderful. The raw mateure very abundant, and of kinds, as we have seen. some of them. Most of raw materials must be ed more or less for use, is calls for manufacturing, is a great abundance of

coal, to furnish power for such work; and there is also much water power along the Fall Line, in the Piedmont Plateau, and among the mountains. The conditions here are very favorable, therefore, for manufacturing. Why, then, should these raw materials be sent far away to be manufactured?

This is a question that the Southern people have asked themselves; and they have answered it by the manufacture of many goods on a grand scale. There is every reason, too, to believe that this manufacturing will rapidly increase in the future, for the South has all that is necessary for very extensive

manufacturing, and the people are awake to their opportunities.

Although much of the pine, oak, and other lumber is sent North, a great deal of it is made into doors, blinds, 2. Manufacturniture, etc., at factories in tures from the MACON, MONTGOMERY, MO-forest BILE, CHATTANOOGA, MEMPHIS, LITTLE ROCK, and ATLANTA (Fig. 112). HIGH POINT, in North Carolina, "the Grand



is a great abundance of

Fig. 111. — Diagram to show what was done with the Southern cotton in 1900, as compared with 1880.

States.

Rapids of the South," is now one of the most noted furniture manufacturing centers of the South, although a few years ago it was hardly known. There are now eighty manufacturing plants there.

The Southern forests are of value in several other ways. From them are obtained turpentine, wood alco-



Fig. 112. — A planing mill in eastern North Carolina. Notice the great piles of boards in the yard behind the mill.

hol, and tannic acid (p. 42). The tannic acid from the hemlock bark of the North gives the leather a red color, so that shoes made from it need to be blackened; but tannic acid from the chestnut oak of the South gives a lighter, or tan, color, and it is from such leather that tan shoes are made.

Turpentine is obtained from the sap of the long-leafed pine. The bark is cut through near the base of the tree, when the liquid oozes forth. This is then distilled in a furnace, and one of the products is turpentine. Other products obtained from the pine are rosin, tar, and wood alcohol. Thus the long-leafed pine is a very valuable tree, for all these products are used in every part of the country.

BIRMINGHAM, the leading iron manufacturing center of the South, and for that

3. Manufacture reason called the "Pittsburgh of iron and steel of the South," is located on an goods old cotton plantation. In 1880 the town had a population of 3086; but now it contains over 132,000 persons. What special advantages has it (p. 79)? In and near this city, as at Pittsburgh, the iron ore is reduced to iron in blast furnaces (p. 58) and then changed to steel and various other useful articles.

Several other cities near the mountains are noted for their iron manufacturing, as ROME and ATLANTA, in Georgia, and KNOX-

VILLE and CHATTANOOGA, in Tennessee. Chattanooga is also a center for the manufacture of farm machinery.

In some cities there are many cotton mills; for example, in CHARLOTTE, N.C., there are twenty-three, and in and near SPARTANBURG, S.C., thirty-eight. In other towns there are only one or two. Cotton manufacturing there are only one or two. From Danville, Va., to Atlanta, Ga., cotton mills are very numerous, and there are others throughout the cotton belt. Indeed, the Piedmont Plateau has become one of the greatest cotton manufacturing sections in the world. The map (Fig. 113) shows the distribution of these mills in a number of the Southern

While hundreds of Southern cities and towns now manufacture cotton cloth and cotton-seed oil, Charlotte, N.C., Columbia, Greenville, and Spartanburg, S.C., and Augusta, Columbus, and Atlanta, Ga., lead in these industries. What cities in New England are noted for cotton manufacture?

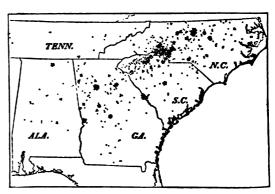


Fig. 113. — A map to show the extent of cotton manufacturing in the South. Each dot represents one mill.

The following facts from an Alabama cotton mill give some idea of the size and output of these mills. This particular mill employs 600 hands, including men, women, boys, and girls, and pays them about \$2000 a week in wages. Every day this mill consumes 15 bales of cotton, each weighing about 500 pounds. Since the average yield per acre of land is about 250 pounds, you can easily figure out how

acres of cotton are called for in one year by gle mill.

his mill, as in many others, white people are ed to do the work. While many of the mills the cities, others are in the country; and



4. — Interior of a cotton mill in the South. There are scores of hines, and each one works steadily weaving the cotton fiber into h

illages have sprung up near the mills. Some e new villages are already so large that they weir own schoolhouses and churches.

the early days the cotton seeds were r picked out of the cotton by hand, we of the and then thrown away. Whitin ney's invention of the cotton 1793, made it possible for one laborer parate as much as a thousand pounds the seed in the same time that five: pounds could be cleaned by hand. of course, made cotton raising far profitable, and led the planters to ate it more extensively.

seeds have also been found to be of, and are no longer thrown away.

They are made into cotton
seed seed oil, which is used in mak
ap, imitation lard and butter, and a

tute for olive oil. There are from

three pounds of seed to one pound

tton, and since, on the average, one

roduces two hundred and fifty pounds

of cotton, the value of the cotton seed from a large plantation is considerable. The part of the seed that is left, after the oil is pressed out, has been found to be an ex-

> cellent food for cattle, and a good fertilizer. Thus the cotton plant now produces two valuable substances besides the cotton fiber.

Some of the other articles manufactured in the South have already been 5. Other manumentioned; for factures in the example, tobacco South

(p. 77) and sugar (p. 75). In each case the work is confined mainly to the section from which the raw material comes. Thus, New Orleans, near the sugar plantations, has large sugar refineries; and Raleigh, Durham, Winston-Salem, and other cities in northern North Carolina, manufacture tobacco.

KEY WEST, on a small coral key south of the Florida peninsula, is also noted for its tobacco factories. It is so near Cuba that the Havana tobacco, so much prized by cigar smokers, is easily obtained. There is also cigar manufacturing at TAMPA. Why there? Besides the articles mentioned, the South makes a great variety of other goods from the products of the farm, ranch, forest, and mine.



Fig. 115.—A cotton mill at Huntsville, Alabama. There are many others as large as this, and many, also, that are even larger.

With so many raw materials and so much manufacturing, commerce in the South is valley in North America, about one hundred

extensive. Transportation of goods There are excellent opportunities for transportation goods both by rail and While some by water. of the harbors are shallow and partly closed by sand bars, others are deep enough for large ocean ships. The principal seaports are kept open by building jetties, and by dredging the sand away. Here, as in the North, the government spends large sums of money each year for this purpose.

The Mississippi River is a great artery of trade (Fig. 117), with many navigable branches; and on the Coastal Plains there are numerous short streams navigable for small boats. Railroads, also, are well developed, connecting all important points in the South with one another, and with other parts of the coun-Among these are some of the leading railways of the country, such as the Southern, the Southern Pacific, and the Louisville and Nashville railways.

The greatest of all the Southern Leading cencities

ters of com-

NEW ORLEANS, the largest in merce 1. New Orleans the eastern part of the United (1) Its size and States south of St. Louis, with a population of over three hundred thousand. New Orleans is situ-

Fig. 116. - Map to show location of New Orleans, Memphis, Birmingham, and Atlanta.

miles above the mouth of the Mississippi. On the map (Fig. 116) you will see that an arm of the sea, called Lake Pontchartrain, reaches up to the city, and that New Orleans is located at the place where the in the form of a half-circle, which | those from New York to Chicago and

River steamers at New Orleans. These boats carry large amounts of freight, as well as passengers, up and down the river.

ns the name, Crescent City, commonly | to New Orleans.

st particular spot was selected for the f the city, because the sailing ships of

enturies ago could reach crossing the lake, while ould not sail a hundred up the river without difficulty. On account shallow water, the large steamers now in use t enter the lake, but can reach the city by ver route.

ien we recall the advanof New York's water connection with interior the West, we ions bu nd rail can readily unand the growth of New Pittsburgh on the

and lake are nearest together. At | reached from New Orleans by boat (Fig. point the Mississippi makes a great | 40). How do these distances compare with

> to Duluth? Also, how far apart are Pittsburgh and Kansas City? Much of the country between these cities is within easy reach of the Mississippi or some of its branches.

There is now a plan to improve the Mississippi River so that large boats can navigate it more easily. When this is done, the port of New Orleans will be even more important as a shipping point for the fertile Mississippi Valley.

Like New York, New Orleans is connected with the interior of the country by rail as well as by water. The Illinois Central Railway extends all the way to Chicago, running parallel to the river for much of the distance; the Louisville and Nashville reaches Louisville, St. Louis, and other cities; and the Southern Railway runs from Wash-

ington to Atlanta, with connections to New Orleans, and thence the Southern Pacific Railway extends westward, across Texas, to California.

Much of the land on which New Orleans is built is frequently below the level of the river. In fact,



Fig. 118. - The embankment, or levee, along the Mississippi, built to prevent the river from overflowing the flood plain.

St. Paul on the Mississippi, and from Memphis southward, a large part of the land as City on the Missouri, can all be | on either side of the Mississippi is a low flood plain, spreading out for many miles, and often threatened with floods. The mighty river, receiving tributaries from regions thousands of miles apart, is charged with yellow mud, which gradually sinks to the bottom as the current becomes slower toward the mouth. This has built up the bed of the river, so that at high water the floods would spread out over the low land if they were not shut in by strong walls of earth, called lerees (Fig. 118).

In spite of their strength, these embankments sometimes give way, especially in the springtime, when the snows are melting in the North; then the destruction to life and property is appalling. At such times hundreds of men patrol the levees, night

midwinter weather is rarely colder than the early autumn of the North. What must be the effect of this climate upon the style of houses? Also upon the presence of birds, flowers, and fruits in winter?

MEMPHIS and ATLANTA (Fig. 116) are two other large and rapidly growing southern cities. The for- 2. Memphis mer is situated in Tennessee, and Atlanta on a bluff with the Mississippi River at its base. Why is that a favorable location for the growth of a large city? Mem-



Fig. 119. — A view of Atlanta

and day, to check the slightest leak. A hole made by even a crawfish may be the beginning of a destructive flood.

Because the land near the river is so low, the soil on which New Orleans stands is very damp. Indeed, in digging foundations for buildings, water is reached a short distance below the surface. On that account it has been difficult to provide proper drainage. A system of drainage and scwerage has, however, been established at great expense.

New Orleans once belonged to France (p. 25), and one person in six in the city

(4) People, and climate of the city is still spoken by some of city these.

Frost seldom reaches this city, and the

phis is a noted river port, and one of the great cotton centers and lumber markets of the South.

ATLANTA (Fig. 119), the "Gate City," is one of the few large cities not located upon a water route. Northeast of it, for over three hundred and fifty miles, there is no easy pass across the mountains, and until 1880, in all that distance no railway crossed the Appalachian Mountains. Near Atlanta, however, there is a good route; and railways reaching westward from the Carolinas, or northern Georgia, come together here, making Atlanta a great railway center.

Owing to its favorable situation as a railway shipping point, Atlanta is the leading t surpasses all Southern cities in the er and variety of its manufactures.



- Moccasin Bend in the Tennessee River, as seen from Lookout Chattanooga is situated on the river bank just to the right of mtain. middle of the picture.

g its factories are lumber, cotton, and nills. It is one of the most progressities in the country, and, like other ern cities, is a busy center.

we recall the roughness e plateau west of the lachians, we can understand the reason hville, for the location lle, and HOOZA o f Снатта-It is on the Tens River (Fig. 120), at a which makes it a gatesomewhat like Atlanta. is much manufacturing especially of articles of iron and wood. her busy manufacturing near by, is KNOXVILLE, i is not quite so large attanooga.

SHVILLE, the capital of essee, has sawmills, furs factories, and flour

or wholesale market of the South; | tributing point for supplies to the surrounding towns and farms. It is also one of the educational centers of the South,

> having Vanderbilt University and other important schools. There are several other wellknown universities in the South, and each state supports a state university. Many of these take a high rank among the universities of the country.

> The coast cities are chiefly engaged in shipping cotton and lumber, and 4. Seaports most of them east of the are located near Mississippi the mouths of rivers, so that these goods may be brought to them by water as well as by rail. In them, also, there

is important manufacturing, especially of cotton goods and lumber. Two of the best-known seaports are CHARLESTON and SAVANNAH, both long noted as shipping



Fig. 121. — Thousands of bales of cotton on one of the wharves at Savannah, ready for shipment.

There are more than six hundred | points for cotton (Fig. 121), lumber, and ies in this city. Being in the midst other goods. Charleston is the leading splendid farming country, it is a dis- lumber port in the South. MOBILE, on Mobile Bay, is another important Southern port.

In Florida are TAMPA and PENSACOLA, both with excellent harbors, and both rapidly growing. Besides its cigar manufacturing (p. 83), Tampa has a growing trade with the West Indies. It is the terminus of important railways, and is the nearest port in the country to the Panama Canal. When this canal is finished, both Tampa

and Pensacola will no doubt have a still greater trade.

Since so much cotton is shipped away, there has been need of a large 5. Other cities number of shipof the Mississippi Valley ping points. Therefore, besides the cities already named, most of which are extensively engaged in cotton shipping, we find the cotton ports of VICKSBURG, NATCHEZ, and BATON ROUGE, on the Mississippi, and SHREVEPORT and LITTLE ROCK on tributaries to that river.

Texas is the largest state in It is even larger the Union. than all the 6. Cities in thirteen states Texas (1) Size of this included in New England and state the Middle Atlantic States, and has a greater area than either France or Germany. At one time it was a separate country, having won its independence from Mexico in 1836. But it desired later to enter our Union, and was admitted as a state in 1845.

Throughout the arid western section there are no cities and few large towns, (2) Smaliness except in the extreme western of the population in the west where EL PASO is located. The Spanish word "El Paso" means "the pass," for this city is situated at a pass in the Rocky Mountains, through which the Southern Pacific Railway extends westward,

while an important line reaches southward into Mexico. Much of the land along the Rio Grande and Pecos rivers, and some other streams, is irrigated; but in most of the western part of Texas the chief industry is cattle raising, in which Texas is the leading state of the Union.

East of the arid and semiarid plateau, most of the crops of the Southern States grow in great abundance. Rice and sugar

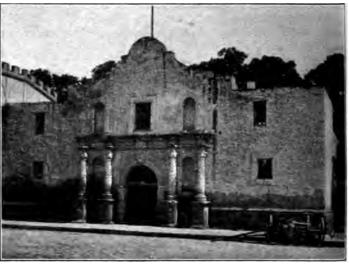


Fig. 122. — The Alamo, at San Antonio — an old Spanish church, famous in the history of Texas.

cane flourish on the Coastal Plain, and forests are extentive east, and the sive. On the higher plains, cities there just west of these lowlands, the warm climate and fertile soil are especially favorable to cotton. Texas leads all the states in the production of this valuable crop. What important minerals are found in Texas, and in what parts of the state (pp. 79, 80)?

Naturally, since so many raw materials are produced in the eastern half of this state, large cities are located there. Two of them are Dallas and Fort Worth — both shipping points, the former for cotton, the latter for cattle from the plains of the West. Dallas is also a busy manufacturing center. Austin, the capital, is on the Col-

o River, and SAN ANTONIO (Fig. 122), largest city in the state, lies farther twest.

wo other important cities are Houston, the coast, and GALVESTON, the princieaport west of New Orleans. Immense tities of cotton and other products are men, the Indians were placed on lands reserved for them in different places. These reserved sections were called *Indian reservations*, and at one time nearly all the area at present included in the state of Oklahoma was given over to the Indians. It was then called *Indian Territory*.



123. — A view of Oklahoma City as it appeared April 22, 1889. Compare this with Figure 124.

med from Galveston. It is also a port telet for goods from the Far West. roads from the north and west cross set to Galveston and other Gulf ports; railway lines likewise cross the state to lee and California.

one of the cities of Texas is yet of size, since manufacturing is not exively developed.

here, as in the other hern States, there ich recent advance anufacturing.

l of our states, exthe thirteen origstates, were once tories, occupied by lahoma Indians.

*history As they besettled they were, by one, admitted to

Jnion as states. One of the last states a admitted was Oklahoma, and it is fore of special interest. Not many ago Oklahoma was occupied by Indians. As the red men in various parts of country were conquered, and the land they occupied became needed by white

As our country became more and more settled, and it was found that the Indian Territory had great resources, the white men desired this land also. One strong reason for taking it from the Indians was that they did so little to develop it. Accordingly, in 1890, the western part of the Indian

Territory was thrown open to white settlers, and called Oklahoma. People rushed in there, by thousands, to secure the free farms that the government offered, and the region was rapidly settled (Figs. 123 and 124). Then people asked that the two divisions, the Territory of Oklahoma in the west and Indian Territory in the east,



Fig. 124. — A view of a part of Oklahoma City in 1908. Compare this with Figure 123 to see the great change in less than twenty years.

be admitted into our Union as one state. This was granted, and in 1907 the new state was admitted under the name of Oklahoma.

Oklahoma, like Texas, is largely a plain; but in the east there are low, forest-covered mountains, con(2) Its resources

taining coal, iron, and other valuable minerals. In the extreme west the climate is more arid, and grazing is the leading industry; but in most of the state the plains are splendidly fitted for agriculture. Many farm crops are produced, the leading ones being corn and other grains in the north, and cotton in the south.

Although the state is so new, there has already been great development of agriculture, lumbering, and mining, and no doubt there will be much greater advance in the next few years. The progress in manufacturing is indicated by the number and size of cities and towns that have already sprung up. The largest is the capital, OKLAHOMA CITY, but MUSKOGEE, SHAWNEE, and GUTHRIE are also large and growing cities.

1. How are the surface features of the northeastern portion of these states similar to those farther north? 2. To what extent is the surface of the Southern States level? Questions 3. What mountains are found there, besides the Appalachians? 4. What is the character of the coast? 5. Describe the climate. 6. What is the rank of the South in the lumbering industry? 7. Name the kinds of trees found there, and tell how the lumbering is carried on. 8. What about fishing? 9. To what extent is agriculture important? 10. Why was slave labor needed on the cotton plantations? 11. Tell about the amount of cotton produced, and the climate it requires. 12. How is the cotton raised and marketed? 13. What plants produce sugar? 14. Where is sugar cane grown, and how is it cultivated? 15. How is sugar obtained from the cane? 16. What about the importance of rice as a food? Why may we expect that more will be raised in the future? 17. How is it cultivated and prepared for market? 18. Where is tobacco produced in the South? 19. What can you tell about fruit and vegetable raising here? 20. What other farm products are raised? 21. Where is ranching important? Why? 22. Where are coal and iron ore found? 23. Oil and gas? 24. What about building stones and clays in the South? 25. Phosphates? 26. What other mineral products are important? 27. How has manufacturing in the South advanced since the Civil War? 28. What goods are manufactured from products of the forests? 29. Name the principal cities engaged in that work. 30. What cities lead in the manufacture of iron and steel goods? 31. What is the extent of cotton manufacturing? 32. Name the chief cotton manufacturing cities. 33. Explain the value of the cotton 34. Of what value are the cotton seeds? 35. What other manufacturing is carried on in the South? 36. What conveniences has the South for the transportation of goods? 37. Tell about the size and location of New Orleans. 38. What connections by water and rail has it with the interior of our continent? 39. What difficulties are caused by the Mississippi River? 40. Tell about the people in New Orleans. What about the climate there? 41. State the important facts about Memphis and Atlanta. 42. About Nashville, Knoxville, and Chattanooga. 43. Locate and give the principal facts about the coast cities east of the Mississippi; other cities of the Mississippi Valley. 44. What about the size of Texas? 45. Why is the population so small in the western part? 46. What are the resources in its eastern part, and the chief cities there? 47. Give a brief history of Oklahoma. 48. What are its resources? 49. Name and locate its chief cities.

North Carolina (N.C.). 1. Which part is mountainous? Name and locate the highest peak east of the Mississippi River. 2. What are the surface features of this state? 3. Which cities are mentioned in this text? Where is each? For what is each important? 4. What capes do you find on the coast? 5. What are the leading industries? (See Figs. 249 to 278.) 6. Draw an outline map of this state, like that of Maine. Do the same later for each of the other states.

Tennessee (Tenn.). 7. Where are the mountains? The plains? 8. Name two cities among the mountains. For what is each important? 9. State facts about two other cities in Tennessee. 10. Which city is the largest? (See table, Appendix, p. 427.) 11. What large rivers drain the state? 12. What are the leading industries in this state?

South Carolina (S.C.). 13. Describe the surface features of the state. 14. What are the principal industries? 15. What city is on the Fall Line? On the seacoast? For what is each important? 16. Which city is largest?

Georgia (Ga.). 17. Where are the mountains?
18. The plains? 19. What are the industries?
20. Trace the Fall Line across the state (Fig. 66). What cities are on it? 21. Why is Atlanta situated where it is? 22. How does it compare in size with the largest city in each of the three states just mentioned? 23. How does it compare in size with New Orleans, Buffalo, and Providence? 24. Name the two seaports. What do they ship?

two seaports. What do they ship?

Florida (Fla.). 25. What about the relief of
this state? 26. Explain the irregular southern
coast and the Florida Keys. 27. Describe the
climate. How does this influence the crops?

28. What Florida cities are mentioned, and how is each important? Locate each. 29. What mineral product comes from Florida?

Alabama (Ala.). 30, Trace the Fall Line across is state. What cities are situated on it? this state. What cities are situated on it? 81. Where is Mobile? How is it important? 32. Describe the location and industries of Birmingham. 33. What crops are raised in Alabama? 34. What cities are engaged in manufacturing cotton? 35. In lumber manufacturing? 36. Compare Mobile in size with Atlanta and Birmingham.

Mississippi (Miss.). 37. Why is there no city on the coast? 38. In what way can the products of the state be shipped by water? 39. From what cities? 40. What are the products? 41. Why no mining? 42. What about the extent of cotton raising in this

state (Figs. 253, 254)?

Louisiana (La.). 43. State the reasons for the great importance of New Orleans. 44. Why has it a better location than Mobile or Charleston? 45. Compare it in size with those cities. 46. With Boston and Baltimore. 47. What large tributary enters the Mississippi in Louisiana? 48. What crops are raised in Louisiana? Why there? 49. Tell how the delta is caused to grow (p. 6).

Arkansas (Ark.). 50. What large river enters the Mississippi in this state? 51. There is much forest in Arkansas; what kinds (Fig. 265)? 52. Is Arkansas in the cotton belt? (See Fig. 253.) 53. The capital is the largest city. Compare it in size with Memphis. Why is it less favorably situ-

ated than that city?

Texas (Tex.). 54. Where are the mountains? 55. Where are the forests? Why there? 56. What are the industries on the western plains? city lies in the western part? Why there? 58. What are the industries in eastern Texas? 59. What cities are in eastern Texas? 60. For what is Galveston noted? 61. Compare it in size with New Orleans and Charleston. 62. Texas is how many times as large as Rhode Island? (For area, see table in Appendix, p. 425.) As Pennsylvania? 63. Add together the areas of all the New England and Middle Atlantic States, and compare the total with the area of Texas. 64. Compare the population of Texas with that of Massachusetts. (See Appendix, p. 425.)

Oklahoma (Okla.). 65. What has been the history of this state? 66. What about the climate of the western part? 67. What crops are raised in the northern part? In the southern part? 68. Into what river does the state drain? 69. Name and

locate the chief cities.

70. Which is the smallest of the Southern States? General Review 71. Compare it with Pennsylvania and Massachusetts in size. 72. State Questions the principal industries of the South. 73. Of what advantage is it that they are so different from those of the North? 74. Name the principal cities on the Fall Line, and explain the importance of each.

1. Show several ways in which New England and the Southern States are dependent on each other. 2. What effect did our Civil War have on the cotton manufacturing of Suggestions England? 3. Near what places were some of the great battles of the war fought? 4. What other inventions may well be compared with the cotton gin in importance? 5. About how much sugar does your family use each year? 6. What reasons can you give for expecting the cotton mills in New England to prove less profitable, now that the South is developing such mills? 7. Find out how much nearer it is from Chicago to the Panama Canal by way of New Orleans than by way of New York. What effect will this probably have on New Orleans? 8. Through what waters would a boat go from New Orleans to Kansas City? To Pittsburgh? Chicago? To San Francisco? 9. Make a drawing of these states, including the principal rivers and cities. Locate the capitals.

5. Central States

1. Name the large rivers of this group. 2. Draw a sketch map showing them. 3. Into what ocean does the Red River of the North flow? 4. Sketch the five Great Map Study Lakes. 5. Locate upon each of these sketches the cities printed in large type. 6. Are any of the very large cities in these states not situated on rivers or lakes? 7. How far did the glacier advance in these states (Fig. 18)? 8. In what ways must the Great Lakes have influenced the development of this region? 9. Where are mountains found in these states? 10. What does the fact that there are so many rivers tell about the rainfall?

A little over a hundred years ago, when the pioneers had pushed across the Appalachian Mountains into Ohio and Surface Kentucky, they were gladdened features by the sight of immense tracts 1. Extent of of level land (Fig. 127). For level land hundreds of miles the plains slope gently toward the Mississippi; and beyond that river, they slowly rise again, for hundreds of miles, to the very base of the Rocky Mountains.

In western South Dakota and in southern Missouri, low mountains rise above the plains. There is a hilly region around the western end of Lake Superior, in Michigan,

Wisconsin, and Minnesota; and in eastern Ohio and Kentucky there is also hilly land, for the Appalachian Plateau extends into these states. With the exception of these small areas of mountains and hilly lands, most of the region is a vast level tract, quite

remove the trees from a single acre, and to drag away or bury the bowlders. On the prairies (p. 19) of the Central States, however, such labor was unnecessary, for there were hundreds of thousands of square miles covered with grass (Fig. 127).

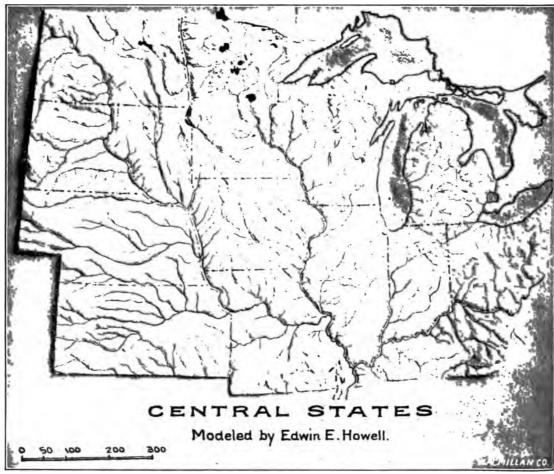


Fig. 126. - Relief map of the Central States.

unlike the hilly and mountainous country farther east. What are the names of the mountains of the Central States?

The hearts of the pioneers were gladdened not only because the land was level, but be
2. Absence of trees and free from forests and bowlders.

In many sections of New England weeks of hard labor were required to

Being so far from the coast, this region is not influenced by sea breezes, as are some of our states. Florida, for Climate

example, being nearly surrounded by water, receives ture, with reabreezes from the ocean that sons for the greatly temper the heat of

summer. Similar breezes greatly temper the cold in winter, for the ocean does not

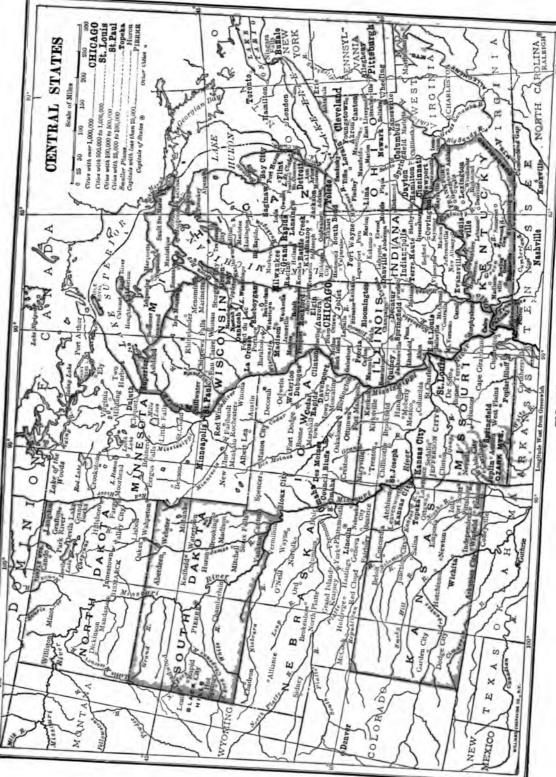
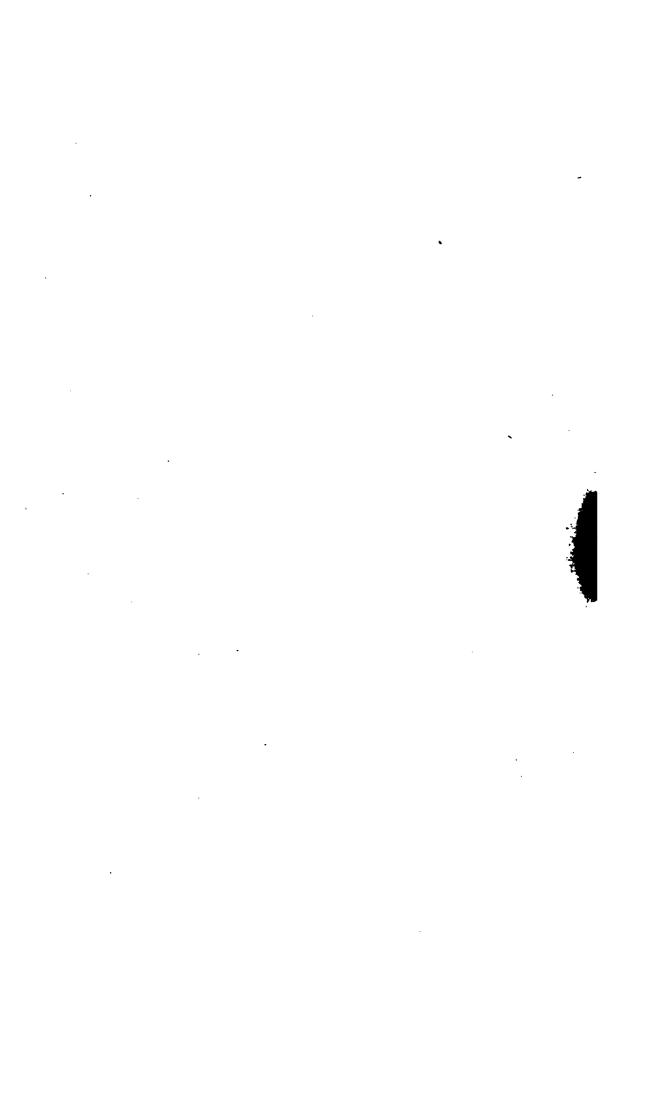


FIG. 125



become so cold as the land. Thus water makes the temperatures of the two seasons more nearly equal, or equalizes it. For that reason such a climate is said to be equable.

Because the Central States are so far from the ocean, the summers are very warm, while the winters are very cold. It is often as hot there in summer as it is in the Southern States; but in winter the coldest part of our country is in North Dakota and Minnesota. Such a climate, with hot summers and cold winters, is common in the interior of continents and is, therefore, called a continental climate. It

have ample rain for farming, as is indicated by their many rivers. This rain is brought from the Gulf of Mexico and the Atlantic Ocean, by the winds which every few days blow from the south and east.

From eastern Ohio to western Nebraska, and from the Great Lakes to the Gulf of Mexico, agriculture is a very important industry. Indeed, east of the millions of persons in Europe arid lands and in our coast cities look to the Mississippi Valley for their bread, meat, and other food, as they look to the South for cotton.



Fig. 127.—A view on the level plains of the Mississippi Valley. For hundreds of miles there is just such level land as this.

is also said to be extreme, in distinction from a climate that is equable.

The Great Lakes are such large bodies of water that they influence the climate near them much as the ocean does, only to a less degree. Thus the climate is cooler in summer, and warmer in winter, along the shores of the lakes, than at a distance from them.

Since these states are so far from the ocean one might suppose that they would receive as. The fall of little rain. This is true of the western part of Kansas, Nebraska, and the two Dakotas, where the climate is arid. The reason for this arid climate has already been stated (p. 7). With the exception of the western border, however, the Central States

The farms vary greatly in size, from a few acres to several thousand, but the majority contain from 80 to 160 acres. In the main, they central Ohio resemble the one in Ohio that (1) The house is here described. On this and its surroundings house in which the family lives, with a barn near by for horses, milch cows, and hay, and with sheds near it for storing grain and farming implements.

A windmill at the rear of the house keeps the milk house well supplied with cold water, and also fills the water troughs in the barnyard. Near the house is an orchard (Fig. 129) of apple, peach, and pear trees, with a few rows of berry bushes in one part, and a chicken house in another (Fig.

128). Here enough chickens are raised to supply some meat, and all the eggs that are needed, with some to sell. On one side of the front yard are a few beehives, and back

of them, between the orchard and the barn, is a garden of vegetables. Still back of that are several pigpens, in which hogs are fattened for home use, and also for the market.

Farther away from the house are fields in which there are at least three (2) The fields, or four different and what is done with their kinds of crops.

crops Every farmer in that vicinity expects to raise corn, — perhaps sixty acres of it, - some grass for grazing and for hay, and wheat or some other kind of grain.

After these crops are harvested, they are either sold or fed to stock — horses, cattle, The lathogs, or sheep — upon the farm. ter plan is often followed, chiefly because it | not meet with other persons for several

the farm, which not only supply the family with fresh milk and butter, but furnish some cream or butter to sell.

Since there are usually only a few houses



Fig. 128. - A farmer feeding his chickens and turkeys.

in sight of a farmhouse, and no store or post office within a number of miles, (3) Contact with the farmer and his family may neighbors

> days at a time, although they often see friends driving by. In the busiest season, from spring till fall, they make few trips to town. However, they have a telephone by which they can talk with neighbors, and with friends and merchants in town, while the postman brings the mail to their doors.

Some persons would not care for such a life as this, because it is too (4) Attractions lonesome, and of such a life there is too much hard work connected with it. But this farmer enjoys it greatly, because he likes to take care of

his stock, to work in the soil, and to watch his crops grow. In addition, he is able to generally two or three good milch cows on | raise most of his own food, and his whole



Fig. 129. - A farmer and his family in the orchard near the house.

pays better to fatten stock and sell it, than | to sell the crops themselves. There are



Fig. 130. - A farmer cutting and binding wheat in the harvest season

soil from

A corn-

life is more independent than that of persons in a town or city.

Some of our greatest men have come from farms. Can you name two Presidents who spent their childhood on farms of the Central States? Where were their homes? What can you tell about their early life?

Corn (Fig. 131) is raised in most of the states of the Union, and you have already learned how 3. Indian corn, important it is in the or maize South. It is in the (1) Extent to which it is Central States, however, raised that we find the greatest amount. The corn belt of the country (Fig. 249) extends from Ohio to central Kansas and Nebraska, with smaller quantities raised to the north, south, east, and west of it. Farmers within this belt usually expect to devote from one third to one

half of their land to

corn; therefore, in

these states in sum-

across

traveling

tion.

mer, one sees cornfields in every direchusk turned down to show the kernels of corn on the cob.

The seed is planted in rows in the springtime. Soon the little stalks appear above ground, growing rapidly during the hot summer months, until they | into hominy and breakfast foods, or into

reach a height of from seven to ten feet (Fig. 132). In order to keep the soil loose, and kill the weeds, the ground between the rows is plowed when the corn is young; (2) How it is but as it grows higher, the shade of harvested its leaves protects the

both drought and weeds. field usually presents the most

beautiful appearance in July, when the corn "tassels out" (Fig. 132). The plants then entirely hide the ground from view, and the rich green stalks, with their long, slender leaves, bend to the breezes in the most graceful

If the stalk is to be used as fodder for cattle in winter, it is cut before frost, when the kernels on the cob are still somewhat soft and milky. If left until after frost, the grain hardens, and then the harvest season begins. Men drive into the fields in wagons and tear the husks from the ear, spending day after day at that kind of work.

Corn is put to many uses. Much that is

raised is fed to cattle and (8) Its uses hogs, as already stated. Some is made corn meal. Starch is another product, and a very extensive use of the grain is in the manufacture of whisky in *distilleries*. There are many distilleries in St. Louis, Louis-VILLE, and other cities within the corn belt.

PEORIA, in central Illinois, is another great center for distilleries.

Wheat, like corn, is produced in all the Central States, as well as in other parts 4. Wheat of the country (1) Extent of its production (Fig. 251). It is an especially important product in Kansas, Nebraska, and Indiana; but the section which at present is most noted for wheat is the valley of the Red River of the North (Fig. 133). In this valley there is a broad, level plain, including western Minnesota, eastern North and South Dakota, and a portion of Manitoba, which is one of the finest wheat regions in the world.

which was larger than all the Great Lakes put together. When the ice melted away entirely from the valley, the Red River was once more able to flow northward, and then the great lake disappeared. The soil of the wheat region is the sediment that was deposited on the bottom of this ancient lake.



Fig. 132. — View in a cornfield in Nebraska. Notice how very tall the corn grows in this fertile soil.

One of the reasons for the fertility of this section dates back to the time when the Great Glacier was

(2) Why extensively grown in the Red River Valley melting away. The ice then stretched across the valley of the Red River, which flows northward into the Arctic. This ice dam prevented the river from flowing in

that direction, and forced it to seek an outlet southward. A broad lake was thus formed,

The land here is almost as level as the surface of the sea; it is so level, in fact, that after a rain the water stands in sheets on the fields. It is necessary to elevate the roads a foot or more above the surrounding land and to make ditches on either side; otherwise the roads would be muddy much of the time. In every direction there is nothing to break the view except a farmhouse every half mile or so, with a few trees around it. Over this open plain



Fig. 133.— Harvesting wheat on a large farm on the plains of the fertile Red River Valley of the North.

the wind sweeps with terrific force, somewhat as upon the ocean: and in winter fierce, blinding snow squalls, or *blizzards*, are not uncommon.

Upon this plain one may ride on the train northward toward Winnipeg all day

(3) How cultiparted on a large crop besides wheat. Most of farm the farms are of moderate size, but some are enormous. For example, one farm in North Dakota contains over thirty thousand acres. How many square miles is that?

This farm is divided into six parts, with farm buildings upon each. To prepare the ground, from fifteen to twenty men at a time plow and sow the seed on each division. One takes the lead, another follows behind; then comes a third, fourth, and so on. The grain is harvested on a similar plan (Fig. 183). One hundred and twenty men, and three hundred horses, are employed in the planting season, and three hundred men during the harvest. Since one acre usually produces from fifteen to twenty bushels of wheat, an immense amount of grain is obtained from this single farm.

The great quantity of wheat produced in the Red River Valley and the neighboring (4) Influence of region has helped in the growth wheat on of the cities of MINNEAPOLIS, growth of cities St. Paul, and Duluth. It has also caused the growth of cities in the midst of the wheat fields, like Fargo in North Dakota and Sioux Falls in South Dakota. Since most of the grain is shipped to the East or South, it has influenced the growth of scores of other cities along the Great Lakes, the Mississippi River, and even on the Atlantic coast. State how this can be.

While each farm in the Central States usually has a small orchard, like that on the Ohio farm, fruit raising is a special industry.

5. Fruits and in those sections where the climate and soil are favorable, as in the neighborhood of the Great Lakes. You have already learned that the immense area of water in these lakes, which do not freeze over in winter, renders the summers cooler, and the winters warmer, than they would otherwise be.

This is why the grape belt of western New York (p. 53) extends westward along the shores of Lake Erie far into Ohio.

The Michigan peninsula, which has Lake Michigan on the west, and Lakes Huron and Erie on the east, is also a noted fruitraising region. Here great quantities of peaches, apples, and other fruits are produced. With what part of the Atlantic coast can this fruit region be best compared (p. 53)?

While these regions are especially noted, the raising of fruits is common in all the Central States. Among the kinds raised are peaches, grapes, apples, cherries, plums, and berries.

Vegetables of many kinds, such as sweet corn, potatoes, turnips, beets, cabbages, tomatoes, peas, beans, lettuce, pumpkins, squashes, and celery are also raised in all of the Central States. Some of these are grown for use at home, some for canneries, and some for sale in the cities. The fact that there are so many cities makes truck farming profitable in their neighborhood, as is the case in New England.

Tobacco is another valuable farm product in the Central States (Fig. 256). While it is raised in many sections, the greatest quantity comes from Kentucky and Ohio, which rank with Virginia (p. 52), North Carolina, and Tennessee (p. 77) as leading tobacco states. Both Louisville and St. Louis are important tobacco markets. What other cities have the same industry (pp. 52 and 77)?

Some domestic animals are raised on almost every farm. Among these the most important are horses, cattle, sheep, hogs, hens, and turkeys.

Some farms, however, are (1) Principal mainly devoted to one or a few kinds, and their kinds (Fig. 134). For example, in the more hilly sections, where it is not easy to cultivate grain, cattle and sheep are numerous, and dairying is important. Ohio is one of the foremost sheep raising states.

More horses are raised in Iowa than in any other state in the Union, more hogs in Iowa than in any other state, and more milch cows than in any other state except New York.

Kentucky is famous for its fine stock,

(2) The Blue Grass Region of Kentucky; its fine stock and its caverns

especially horses and mules, raised in the "Blue Grass Region" about Lexington. The grass here has a bluish color,

and is very nourishing, making possible the raising of fine stock.

The reason why this grass is so nourishing is that the soil in this section is made of bits of decayed limestone in which there is lime phosphate, an excellent plant food This phosphate comes (p. 80). from the shells of small animals which lived in the sea that covered this region millions of years ago (p. 6). On dying, they helped to (p. 6). make a deposit of sediment on the sea bottom; and this sediment has since changed to limestone rock, which is now raised above the sea. As the limestone decays, the phosphate mixes with other rock bits, and thus fertilizes the soil.

The abundance of limestone in this part of Kentucky is the reason for the numerous caves that exist there (Fig. 135). These caves are long tunnels that have been slowly eaten out by water that percolates through the rock, dissolving the limestone.

The largest of all is the Mammoth Care, which is said to have more than one hundred and fifty miles of tunnels, or galleries. They wind about in an irregular manner, some being many feet below others, and all together forming a network, or labyrinth, into which a stranger dares not venture without a guide.

Great quantities of oats and barley are raised in the Central States. The former is a common food for horses, 8. Other farm but the latter is largely used in the manufacture of beer. The great breweries, found in every large city, consume immense quantities of barley in order to obtain the malt which is needed in making beer. In CINCINNATI, ST. LOUIS, and MILWAUKEE, beer making is one of the important industries.

Another farm crop in some sections is



Fig. 134. - A scene on a chicken farm in Southern Missouri. There are hundreds of chickens on this farm.

From the bark of the flax stem a fiber is obtained which is used in making linen, while linseed oil is made from the flax seed. Hops, used with barley in making beer, are also raised; and rye and buckwheat are produced on many farms. Sugar beets are now cultivated in many states, and they supply a part of the sugar consumed in the country.

Finally, a vast amount of hay is grown; some of it is fed to farm animals, but much is sold in the cities for the use of the horses there. The hay crop is one of the most valuable in the Central States.



Fig. 135. - A view in one of the Kentucky caves. The icicle-like points hanging from the roof (stalactites) and the columns extending upward from the cave floor (stalagmites) are made by the deposit of limy matter that the water brings in solution as it percolates through the limestone of the cave roof.

Passing westward from the fertile valley of the Red River of the North, one finds the farmhouses decreasing in Agriculture in the arid section number, and the country 1. Meaning and becoming more and arid, until, finally, in western extent of the Great Plains North Dakota, there is very little farming without irrigation. At the same time, the plains gradually rise higher

and higher, until, near the base of the Rocky Mountains, an elevation of fully a mile above the sea is reached. This arid plateau, extending from Canada to southwestern Texas (p. 72), is commonly known as the Great Plains.

The soil is excellent, and where irrigation is possible, 2. Irrigated sec- there are fine tions, and their farms. In many products places the streams furnish water for irrigation; in others, water rises to the surface when wells are driven into the earth. Such wells, from which the water often gushes forth as in a fountain, are called artesian wells (Fig. 136). The

water comes from the rock layers underground, and by its help much land is now cultivated which a few years ago was of little use.

Every year the amount of land cultivated in this section is increasing; and now that the government is building reservoirs to store the waters that otherwise run off through the rivers in spring, there will be still more land under irrigation. These irrigated farms produce the same crops as other parts of the Central States. Crops that will grow in a dry climate are also being introduced (called "dry farming"), and this is another reason why farming is increasing here.

Still, most of the arid region of the Great Plains is unsuited to farming. For that reason there are few towns and no large cities, as you can (1) Its extent see on the map (Fig. 125). The entire western third of North and South Dakota, Nebraska, and Kansas, as well as the Great Plains farther west, are given over mainly to ranching (Fig. 137).

This industry is carried on in much the same way throughout all parts

of the arid West. In western (2) Location of North Dakota, for instance, the ranchman's house and corthere is little water except rals



Fig. 136. — An artesian well supplying water for use in irrigation in western United States.

in the widely separated streams, and there are very few trees except along the stream banks. Since the ranchman

his house, sheds, and stockades, or corrals (Fig. 138), within easy reach of these two things. If there is no neighbor within several miles, it is all the better, for his cattle are then more certain to find abundant grass.

Few fences are built, partly because most of the region is owned by the gov-(3) Why few fences. ernment, not by ranchmen. Very often they own only the land near the water; but this gives them control of the surrounding land, for it is of no use to any one else if his cattle cannot reach Another reason the water. why fences are not common is

that it is necessary for the cattle to roam far and wide in their search for food. The bunch grass, upon which they feed, is so scattered that they must walk a long distance each day to find enough to eat.

A single ranchman may own from ten to twenty thousand head of cattle, and yet

sometimes they stray one or two hundred miles away.

Twice a year there is a general collection, must have both water and wood, he locates | or round-up (Fig. 139), of cattle, - the



Fig. 137. - Cowboys and cattle on a ranch in western United States.

first round-up occurring in May or June, and the other early in the fall. One object of the first is to brand the calves that have and how accomplished been born during the winter.

Since there are few fences, cattle belonging to ranches which are even a hundred miles apart become mixed during the winter; and those in a large

herd may belong to a score of different ranchmen. Each cattle owner has a certain mark, or brand (Fig. 140), in the form of a letter, a cross, a horseshoe, etc., which is burnt into the side of every calf.

A round-up, which lasts several weeks, is planned by a number of ranchmen together. A squad of perhaps twenty cowboys, with a wagon and provisions, a large number of riding horses, or "ponies," and a cook, go in one direction; and other wagons, with similar "outfits," set out in other direc-

tions. Before separating in the morning, the members of a squad agree upon a certain camping place for the night, and they then scour the country to bring the cattle together, riding perhaps cixty or



Fig. 138. — Cattle in a corral on a western cattle ranch.

they may all be allowed to wander about upon public land, called "the range" (Fig. 137). Usually they keep within a distance of thirty miles of the ranch-house; but | eighty miles during the day.



Fig. 139.—A round-up on the Great Plains. All the cattle in the distance belong to one ranchman; those in the front of the picture to another.

Each ranchman knows his own cattle by the brand they bear; and since the calves follow their mothers (Fig. 140), there is no difficulty in telling what brand shall be placed on them. After branding the calves, each ranchman drives his cattle homeward, to feed during the summer within a few dozen miles of their owner's home.

The second large round-up is similar to the first, except that its object is to bring together the steers, or male (5) Second round-up, and cattle, and ship them away to what follows market; it is therefore called the beef round-up. A ranchman who owns collected, they are loaded upon trains and shipped to distant cities to be slaughtered (p. 109).

Very often the cattle have found so little water, and such poor pasturage, that they have failed to fatten properly, and must be fed for a time before being slaughtered. This may be done upon the irrigated fields near the rivers in the ranch country; or the cattle may be sent for this purpose to the farms farther east, as in Kansas, Missouri, Iowa, and Nebraska.

The lives of ranchmen and cowboys are interesting and often exciting,

went of each day being event in the ranchman most of each day being spent in the

Fig. 140. - This animal bears the brand of the owner. The cowboy is trying to catch the calf that is following its mother; and when he does he will place the same brand on it.

saddle (Fig. 141). They are so far separated from other people that they must depend upon themselves far more than most people do. For instance, a ranchman must build his house, kill his beef and dress it, put up his ice, raise his vegetables, do his blacksmithing, find his fuel, and even keep school for his children if they are to receive an education. He affords a good example of the pioneer life which was so common in early days.

twenty thousand cattle may sell nearly half | that number in a season. As the steers are | cultivation, or given over to ranching, forests

Although so much of the land is under

are found in many sections. In Wisconsin, for instance, in traveling northward from the well-cultivated southern portion, one comes to a section where farmers are beginning to take the place of lumbermen. Many log huts stand here in small clearings, with the green fields still dotted by tree stumps. But beyond, little else than woods can be seen.

In these forests are many kinds of trees belonging to the north, especially the evergreens, such as hemlock, spruce, white pine, and cedar. There are also some hard woods, such as oak, birch, and maple.

Lumbering is still an important industry in the neighborhood of the Great Lakes.

It is carried on in much the same manner as in Maine (Fig. 142), although a great deal of the timber is brought to the sawmills by wagons or rail, instead of being floated a long distance downstream.

The excellent water power in the Mississippi River, at MINNEAPOLIS (Fig. 158), early led to the building of sawmills there, and made that city famous for lumber.



Fig. 141. — A cowboy and his pony. The rope in his hand is his lariat, with which he lasses the cattle.

Since the Central States have no seacoast, all the oysters, cod, and other sea fish consumed in this section must be brought from the Pacific coast, or from the Atlantic, or Gulf coasts. Thus, while the people of these states supply meat and grain for those living in other parts of the country, they, in turn, depend upon others for some of their food.

The Central States, however, are not entirely

dependent upon the sea for their fish. In the rivers there are some excellent fish, quite different from those in the ocean; and in the lakes there are still other kinds. There is, therefore, considerable fishing here, especially on the Great Lakes; but the fishing industry is by no means so important as in the groups of states already studied.

Coal is mined in almost all the Central States. Il- Mining linois pro- 1. Coal

duces most, ranking next to (1) Its wide West Virginia among the states distribution of the country. Ohio produces almost as much, however, and large quantities come from Indiana, Iowa, Kansas, Kentucky,



Fig. 142. — Floating logs downstream to a sawmill in Wisconsin.

Other mills are situated farther down the Mississippi, as at WINONA. They are also numerous at DULUTH, in Minnesota, and at SUPERIOR, which is just across the state line in Wisconsin.

ouri, and Michigan. There is so coal in this section, and it is found ghout so large an area, that it is easy tain fuel for manufacturing in almost part.

hile Pennsylvania produces two kinds al, anthracite and bituminous, the Cender coal, tral States have only the latter thod of kind. But it is bituminous coal that is used in making and because there is so much of this



143. — A view in the oil fields of Kansas. There is an oil well under each derrick.

of coal, it is of great value for iron facturing. In some places the coal lie near the surface, like rock in ries, and then the mining is very simin others it is buried so deep that long s must be sunk to reach it.

hen oil and natural gas were first disand gas covered in New York and erefound Pennsylvania, it was supposed they did not exist elsewhere; but they

have since been found in many places. Name some of them (pp. 56-79). Both oil and gas are found in several of the Central States, especially Illinois, Ohio, and Indiana. Many farmers, whose soil is no better than that of their neighbors, have suddenly become rich by the discovery of oil or natural gas in the rocks far beneath the surface (Fig. 143). In fact, these substances are so abundant in some places that towns, like FINDLAY in western Ohio, have

sprung up like mushrooms.

The way in which gas and oil are formed, and the uses to which they are put, have already been described (p. 56).

In many places in the Central States natural gas is in common use, (2) Cheapness furnishing both of gas as a fuel light and heat in the houses, and fuel in the factories. It is a very cheap fuel, for, after the hole is bored into the earth, it costs almost nothing to produce the gas. The main expense is the cost of the pipes through which it passes.

Formerly Pennsylvania was the chief iron-producing state, having both coal and iron ore; (1) The Lake but some years Superior ago explorers district discovered enormous beds of iron ore near the western end

of Lake Superior. In some places the ore is so soft that, like gravel, it can be dug out with steam shovels, and very often it is so near the surface that the mines are open pits. In other places the mining is done underground. That is the case, for example, at ISHPEMING, in northern Michigan (Fig. 144).

This Lake Superior district is now the leading iron-producing center of the world.

It includes parts of three states — Michigan, Wisconsin, and Minnesota, — the most important being Minnesota, — (Fig. 270), and the least important Wisconsin. These three states together produce sixty-two

times as much iron ore as Pennsylvania, and four-fifths of all the iron ore of the country. The enormous development of mining in this region has caused numerous towns and cities to grow up here.

It is a very unfortunate (2) Why the ore fact that there must be transis no coal in this ported, and iron district. from what ports For in order that the ore may be reduced to the metal, either coal must be carried to the iron mines, or else the ore must be moved to the coal regions. latter has proved the cheaper. Accordingly, hundreds of

boats sail every year from the lake ports of DULUTH, SUPERIOR, ASHLAND, and MARQUETTE, loaded with ore for the manufacturing centers along the lakes.

Fortunately the iron deposits are located
(3) How it is near waterways. If it were louded, and where sent ore a long distance by rail,

the expense might be so great as seriously to check its production. As it is, however, the ore is mined, loaded upon cars, and sent over short lines of railway to the lake shore.

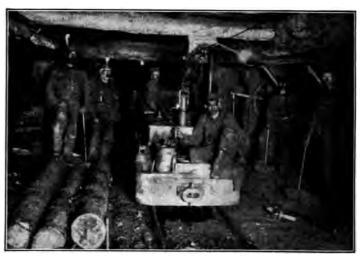


Fig. 144. -- An electric motor in an iron mine at Ishpeming, Michigan.

Great ore docks (Fig. 145), or piers, reaching out into deep water, have been built to hold the ore. Railway tracks are laid upon the docks, and the trains run out upon them to dump their contents quickly into bins. On a single pier there are scores of bins, which together hold enough ore to fill several large vessels. When a vessel is to be loaded, it comes up to the pier; then a door at the bottom of a bin is opened, allowing hundreds of tons of ore

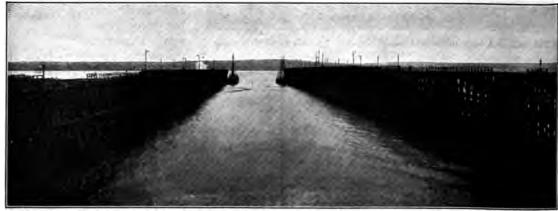


Fig. 145. — The great ore docks on the shores of Lake Superior. Trains loaded with ore run out onto these docks and dump their ore into large bins up to which vessels come to be loaded.

de out. After this, the next bin is emptied, n this way the vessel is filled in a few hours.

s the ore must reach a point where coal sily obtained, it is taken to such lake as CHICAGO, DETROIT, TOLEDO, VELAND, and BUFFALO. Notice how to these cities the coal beds extend 268). From the lake ports the ore is carried by rail to PITTSBURGH, as well

146.—Bars of copper on the dock at Houghton, Michigan. These are to be carried away by the large lake steamer.

many other places in the midst of the fields.

nother metal found in the Central es is copper, which is valuable in many presence ways. It is one of the metals used to make bronze, and also brass; but of late years a new even greater demand for this metal has n. Electricity passes through copper; easily than through other common ds; copper is, therefore, the best rial for trolley wires, for the wire of distance telephones, and for wire used

in electric lighting. Since the use of electricity is rapidly increasing, there is a growing demand for copper.

The Indians and early explorers found pieces of copper on the surface of the ground in northern Michigan. Later (2) Where the it was discovered there in the ore is found pores of a lava rock, and between the grains of a pebble beach which was formed in the

ancient sea, and has since hardened into rock. These copper-bearing rocks are found on the small peninsula that extends into Lake Superior near HOUGHTON. Copper mines were started there long ago, and for many years that has been one of the leading copper-mining regions of the world.

Some of these mines are very deep, one of the shafts reaching to a (3) How copper depth of about is obtained from a mile. When the ore, and where sent

to the surface, it is found mixed with so much beach rock and lava, that it must first be crushed to a powder under powerful hammers, or stamps. Then water is run over it, in order to carry away the bits of rock and leave the heavier particles of

copper. Even after this, some foreign substances are still mixed with the copper, and these must be removed before the metal is fit for use. In order to remove them, the copper is next placed in a large smelter and melted. The pure copper is allowed to run out of the furnace and cool in bars to be shipped away (Fig. 146). Among the foreign substances is a little silver, which is carefully saved.

As in the case of iron ore, the copper is shipped to points along the lakes, and elsewhere, by water and by rail. Much of it goes to the metal manufac-

tories in the New England cities (p. 43). Name some goods that must be shipped into this section instead of away from it. Why?

The largest of the copper mines are near together, and so many men are employed in obtaining the ore, and in getting out the pure (4) Population metal, that large towns have grown dependent on up near the mines. Within a few these mines miles of the most important mines are several towns, the largest being CALUMET. Many of these persons are miners and families of miners; but there must, of course, be storekeepers, physicians, teachers, ministers, etc.; and they all depend for a living upon the precious copper buried far beneath the surface.

There is an abundance of building stones in the Central States. Among these are sandstone and limestone, which are eral products shipped in all directions for building (1) Building purposes. Limestone is also used stones, sand. in iron smelting and in making Portland cement. In addition, there and clay are slates and granites in the hilly and mountainous sections, as there are in New England (p. 36).

Several states produce much sand, which is melted and made into window glass, bottles, and other objects. Clay of various kinds, used in making brick, tiles, or pottery is abundant in all the states.

Lead and zinc, two other metals found in the Central States, occur in pockets and little veins in layers of limestone. The ores are (2) Lead, zinc, mined in many places, as at JOPLIN, and gold Mo., and then sent to furnaces, where the pure metals are separated from the ore. A large part of our supply of lead and zinc is obtained from Missouri. What are some of the uses of these metals? Of what use should you think this lead was to the early pioneers?

Gold and lignite are mined in considerable quantities in the Black Hills in the extreme western part of South Dakota.

Much salt is obtained in the Central States, especially in Michigan. This state produces more salt than any other in the Union, New York ranking second, Ohio third, and Kansas fourth.

The abundance of coal, gas, and water power, together with raw materials, has led to very extensive manu-Manufacturing facturing in the Central States. Great quantities of corn are consumed in making corn meal, hominy, 1. Manufacstarch, and breakfast foods; tures from and some is also used in agricultural distilleries (p. 96). There

products

are many flour mills where wheat is made into flour; large quantities of cats are made into oatmeal; and much barley is consumed in the breweries. Canning of fruits and vegetables is extensively carried on at many places, and the making of sugar from the sugar beet has come to be of great importance.

The ranches in the arid section, as well as the farms in general, supply animals from which meat, lard, soap, and various other products are made in several of the The hides of these animals are large cities. made into shoes, gloves, traveling bags, and other articles, while the wool is manufactured into clothing. Cotton is brought from the South to be made into cotton goods. Much butter and cheese is made in every state.

Near the forests, both along the streams and on the shores of the Great Lakes, the manufacture of furniture and 2. Manufacother articles of wood is an im- tures from forportant industry. On many est products of the rivers of Minnesota, Wisconsin, and Michigan, where there is abundant water power, there are sawmills, furniture factories, and planing mills. Some of the most important are located in OSHKOSH in Wisconsin, and SAGINAW, BAY CITY, and GRAND RAPIDS in Michigan. School desks, office desks, chairs, tables, and other kinds of furniture are made at Grand Rapids, which city is especially noted for the manufacture of furniture. CHICAGO manufactures furniture to a considerable extent.

The crude oil is made into many products, as in the Middle Atlantic States. Name some of these products 8. Manufac-(p. 56). tures from min-

The manufacture of iron ore eral products into iron and steel goods oc- (1) Manufaccupies an enormous number of tures from oil men in hundreds of cities and The manufacture of copper goods is another extensive industry, and many products are made from lead and zinc.



 The employees of a large manufacturing plant in Dayton, Ohio, at luncheon.

l manufacturing in the Central States to as important as in the states along Atlantic coast, and the industry is ly growing (Fig. 147).

tch of the deep soil left in the prairie by the glacier is a clay which is useful in the manufacture of bricks. As in other sections testone of the country (p. 59), there nany brickyards, especially near the

eities. From this same of clay, flowerpots, pipes, and other articles made. During recent, when drainage of farm has become common, the facture of tile for that use has developed into at industry. Many a town has a tile factory.

very high grade of pottery,
1 as Rookwood ware, is manred in CINCINNATI. The
f clay is needed for this, and
t be brought from a distance.
1 irst step in making a vase is
t a lump of clay so that it
asily be molded. Then it is
l upon a potter's wheel, where
rhirled rapidly around while
n molds it with his hands.

In a very few minutes he changes the shapeless lump into a delicately formed vase. It must then be baked, and after the baking, flowers or other ornaments may be painted upon it. The surface is finally covered with a substance which, when baked, produces a glaze. One of the beauties of the Rookwood ware is the peculiar color of the glaze, which is a dark or yellowish brown.

In Missouri, Indiana, Michigan, Ohio, and other states of this section, Portland cement is made from limestone. Pennsylvania produces most cement, but several of the states produce large amounts.

The handling of so many raw materials and manufactured products leads to extensive commerce. The transportatation of bulky goods, such as tion of goods ores, coal, and wheat, is particularly important where the coal and iron ore are so widely separated, and where far more wheat is raised than can be consumed.

The importance of the Great Lakes in bringing the ores to the coal and the wheat



Fig. 148.—The "Soo" Canal. Boats going west pass through the canal on the right; those going east pass through the canal on the left. In the very front of the picture is the gate of a lock.

to the Eastern markets is evident. From Duluth to Buffalo there is only one place where navigation is interfered with. That is at the outlet of Lake Superior into Lake Huron, where there are some rapids. Here a broad canal, large enough for the great lake vessels, has been dug. It is called the Soo Canal (Fig. 148), after the city Sault Ste. Marie, located at this point.

The Mississippi, Ohio, and Missouri rivers, with many smaller tributaries, drain almost the entire area of the Central States. Which parts are not in the Mississippi River drainage area? The three rivers named, as well as many smaller ones, are navigable. Thus the Great Lakes and the rivers together afford admirable water transportation for goods in all directions.

Railroads have been very easily built in this level country, and they connect these two vast water ways at many points. Most of the great railroad systems that cross the continent from east to west pass through either Chicago or St. Louis.

Since the Central States have no ocean coast, we naturally find the principal cities principal cities along the Great Lakes and the along the Great three great rivers, where it is Lakes possible to ship goods by water. Let us first consider those along the Great Lakes.

At the western end of Lake Superior there is a fine harbor, one side being in Minnesota, the other in Wis-1. Duluth and consin. Upon this harbor are Superior two cities, DULUTH and SUPERIOR, which together have a population of over one hundred thousand. The chief products of this vicinity are iron, lumber, and wheat, which are shipped eastward in immense quantities from these two ports. Owing to the nearness of these cities to the Minnesota and Dakota wheat fields, there are enormous elevators for storing grain, and flour mills for grinding it into flour.

Goods are shipped to this point as well as from it, for the people in this section must depend upon other people for their farming implements, clothing, various kinds of food, furniture, and coal. These goods are brought cheaply, because the vessels carrying ore, wheat, and lumber eastward must have a cargo to bring back. Explain how the products of this region help to make Buffalo, Montreal, and New York important, and to keep the mills and factories of New England busy.

Locate Chicago. At this point the small Chicago River empties into 3. Chicago Lake Michigan (Fig. 149), (1) History of forming a small harbor, on this region which a fort was located in early times.

The harbor itself was formed thousands of year ago, while the Great Glacier was melting away. At that time, the ice sheet lay across Lake Michigan, forming a huge dam which prevented the water from



Fig. 149. — Shipping on the Chicago River. This was the first port at Chicago, but now breakwaters built out into the lake make a large harbor.

flowing into Lake Huron, and through the St. Lawrence River to the sea, as it now does. This forced the water to find an outlet southward, past the preent site of Chicago, into the Illinois River, and thence, by way of the Mississippi, into the Gulf of Mexico. It was the wash of this water that dug out the small harbor.

As the West developed, this site proved to be a most favorable one; for whenever a railway was built from the (2) Advantages East to the Northwest, it was of this site necessary for it to pass around the southern end of Lake Michigan. As the city grew in size, other railways were built to it because it was large; and now they approach it from the east, west, north, and south (Fig. 150). Thus Chicago has become a great railway center.

city is an important shipping point | growth. In the year 1840, there were but

in, because it lies in the midst of the | 4470 inhabitants; in 1870, 300,000; in roductive grain region in the world. | 1910, 2,185,283; and now it is the sec-

> ond city in size in the New World. It has long since outgrown its small natural harbor, and a much larger one has been made by building long breakwaters out into the lake.

Chicago is not only a great grain market, but also the (8) Meat pack-most im- ing and related portant industries meat market in the world. All the grazing states of the West ship stock to this point, and in the city itself nearly a square mile is taken up by the Union Stock Yards (Fig. 151). In these are large sheds for the various kinds of stock, pens with high fences, and troughs for food and water (Fig. 152). Train loads of cattle, hogs, and sheep are unloaded here every day. The work employs about thirty thousand men.

The packing houses send out a number of products. By far the most important is meat, for most of the cities of the East are furnished with fresh meat from Chicago and other West-Both live ern cities.

also within easy reach of extensive | cattle and fresh meat are sent in large quantities to Europe also. It may be several weeks after the meat is prepared aused Chicago to have a wonderful | for food before it reaches the table; yet

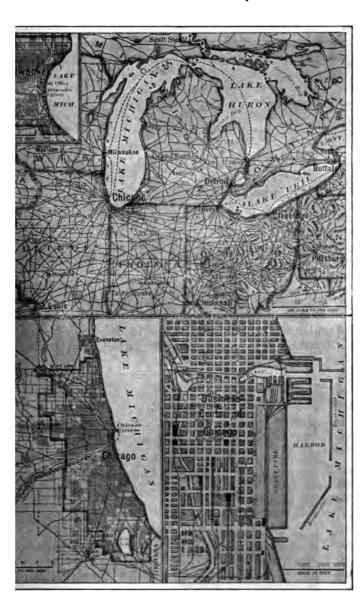


Fig. 150. - Map showing the location of Chicago and Milwaukee.

elds, while lumber and iron ore are brought to it by boat. These facts all this time it is kept fresh by the use of ice. Special refrigerator cars are built for the sole purpose of carrying it.

Besides the meat that is sold fresh, a great deal is canned. The fat of the hog is made

There are many companies engaged in the making of iron and steel goods; one of them alone, the Illinois Steel (4) Other Company, employs ten thou- manufacturing sand men. An enormous amount of fur-



Fig. 151. - A general view of the stock yards at Chicago.

into lard, and not a little beef fat is made into imitation butter, called oleomargarine. Many of the bones are burned and used in the manufacture of sugar (p. 76); and the

horns and hoofs are of use in making gelatine and glue. The hides are made into shoes, gloves, harnesses, and other leather goods. Nothing is wasted in the packing business; even the bristles of the hog are saved and made into brushes; and the hair from the hides of cattle is valuable in making plaster.

It is from the Western packing houses that the shoe factories of Lynn, Haverhill, Brockton, and other cities are supplied with much of their The hides, however, leather. must first be sent to tanneries. One of the principal places for

tanneries is MILWAUKEE, which obtains | facture of farming implements in most

niture is made, and the manufacture of farming implements is also very extensive. Chicago is the home of the National Harvester Company, which controls the manu-



Fig. 152. - A view of a small part of the stock yards (Fig. 151), showing cattle in the pens.

tannic acid from the bark of the hemlock parts of the country. A single one of its tree that grows in the forests of Wisconsin. plants sends out about three hundred thou

farm machines every year. The Pull-Car Works made as many as ten and freight cars in one year, besides al hundred Pullman and passenger

As in New York (p. 63) and other cities, the making of clothing is one most important industries. These ut a few of the kinds of manufacturithis great city where there are thousef factories.

difficulty in providing transportation transportation for the people of the city.

d sewage Street cars are one important and many steam railways carry



8. — A view of the elevated railway in Chicago at the point known as the Union Loop.

There are elevated railways (Fig. also, as in New York, and underd roads, as well. But unlike New, the underground roads are used for hauling freight.

ther great difficulty has been the proper care sewage of the city. For a long time it was into Lake Michigan; but as the drinking was taken from the lake, this became very ous to the health of the people. In order to it away, an immense drainage canal has been ig. 150), connecting Lake Michigan with the River, and thus setting the current toward

the Mississippi and the Gulf of Mexico. This drainage canal, which is wide and deep enough for boats, may in time develop into a ship canal. In that case, large ships may reach Chicago from the Gulf of Mexico, as they now do from the Gulf of St. Lawrence. What effect would this have upon the city?

Chicago has an excellent system of education, from the lowest grades to the university, and hundreds of buildings are given up to this work (6) Education alone. The chief educational institution is the University of Chicago, which, although established as recently as 1890, now has more students than some of the older universities of the East. At EVANSTON is

the Northwestern University; and at CHAMPAIGN the University of Illinois, one of the most progressive and rapidly growing of the state universities.

Other large cities along the lakes are engaged in many of the same industries as Chicago. and Racine
MILWAUKEE (Fig. 150), the largest city in Wisconsin, deals extensively in grain, lumber, and leather, packs much pork, and manufactures a great quantity of flour and machinery. Its tanneries and immense breweries have already been mentioned (pp. 98 and 110). Locate RACINE, a smaller but

important lake port.

DETROIT (Fig. 154), the largest city in Michigan, is also on the Great Lakes water route. The name is a French 4. Detroit and word for strait. Why is that Ann Arbor name suitable here? All vessels going east or west must pass this city, and some railroads connecting the East and the West either cross the strait at Detroit or pass under it by a tunnel. Being at the crossing of important railway and steamship lines, Detroit has become a great shipping and manufacturing center. It deals in grain,

wool, pork, and ores from the West, and | makes iron and steel goods.

The largest city on the Principal rivers, corresponding to Chi- cities along Not far away, at ANN ARBOR, is the | cago on the lakes, is ST. LOUIS, the rivers

University of Michigan, one of the largest in the United States. It is supported by the state. In fact, state universities are established in most of the Central, Southern, Western States. Some are located at the state capitals: for instance, the University of Ohio is at Columbus, the University of Wisconsin at Madison, and the University of Nebraska at Lincoln. Others, like the universities of Illinois, Missouri, and Michigan, are located at other places than the capital. If there is one in your state, where is it? On the lake shore in

Ohio the chief cities are Tolebo and 5. Cleveland and Toledo CLEVELAND (Fig. 154). The former has extensive flour mills and iron manufactories: and the latter, which is a much larger city, being even larger than Cincinnati, Detroit, or Buffalo, has an important trade in grain, lumber, and The situation of Cleveland near the coal and petroleum fields has led to extensive manufacturing of machinery, furniture, and other goods. Much petroleum is refined here, and the building of ships | for the lake commerce is an important industry.



Fig. 154. - Map showing the location of Detroit, Cleveland, Cincinnati, and Pitts burgh, and their relation to the trade routes of the Central and Middle Atlantic

the fourth in size among our cities (Fig. 157). It has a very favorable 1. St. Louis position in the center of the (1) Its location



Fig. 155. - Shipping on the Great Lakes. The peculiar ship in the foreground is called a whaleback.

issippi Valley, on the Mississippi r, near the mouths of its two largest taries. The railway bridges across the issippi at this point have also had great ence on the growth of the city. It is aportant shipping point both by water by rail.

is the greatest manufacturing center of boots and shoes in the United States.

At one time Chicago and St. Louis were almost the only noted markets for grain and live stock in the West; 2. St. Paul and but in later years several other Minneapolis cities have become prominent. Two of these

are the "twin cities," MINNEAPOLIS and ST. PAUL (Fig. 157), both on the Mississippi River. The latter, the capital of Minnesota, is a trade center. From it the products of the West are sent east and south, while farm implements, furniture, clothing, and other articles are distributed among the smaller towns round about.

MINNEAPOLIS, only ten miles distant, is situated at the Falls

of St. Anthony, which furnish splendid water power (Fig. 158). Its location in the midst of the wheat region, together with its water power, has caused Minneapolis to become the leading flour-producing center of America. In the city are many sawmills, grain elevators, and flour mills.

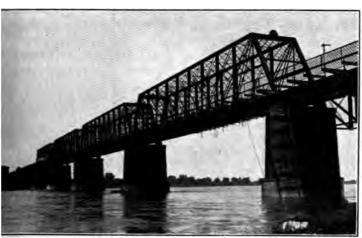


Fig. 156.— A railway bridge across the Missouri River above St. Louis.

ke Chicago, St. Louis is one of our ing markets for grain and live stock; tindus—but, being so far south, it handles Southern products also, cially cotton and tobacco. Besides this, a great manufacturing center. It mantures immense quantities of tobacco, flour, clothing, iron, steel goods, and

One of these flour mills, belonging to the Pillsbury-Washburn Company, is one of the largest in the world. Steam shovels scoop the grain from the trains very rapidly, emptying a car of 750 bushels in eighteen or nineteen minutes. All straw, useless seeds, sticks, etc., are first separated from the grain; then it passes through different machines until the pure flour is produced. During this process it is raised to the top of the building twelve different times, being carried up by rapidly moving belts having many small buckets, or pockets, attached.

Just inside the husk of a wheat grain is the kernel, the most valuable part of the wheat. The husk is removed by machinery, and sold for bran and shorts, and the center, called the heart, or germ, is made into breakfast food. The other portion is ground into flour, poured into sacks and barrels by machinery, and then sent sliding down a chute into the cars which stand near by. This one mill has ground as much as 61,000 barrels of flour in one day. One year the daily output of five mills was about 36,000 barrels.

Smaller cities on the Mississippi River water-3. Other cities way, between Minon the Mississippi neapolis and St. Louis, are WI-NONA, in Minnesota; LA CROSSE, in Wisconsin:

DUBUQUE and DAVENPORT, in Iowa; and QUINCY, in Illinois. Find each. Each is important either for lumber, grain, or farming implements, or for all three combined.

4. Cities on and near the Missouri

The leading cities on the Missouri River are Kansas City (Fig. 157), and western Missouri, OMAHA, in Nebraska. Each



Fig. 157. - Map showing the location of St. Louis, Kansas City, Omaha, Minneapolis, and St. Paul.

is surrounded by a fertile farming country. which produces much grain. Each is also a market for cattle, sheep, and horses raised near by and in the arid region farther west. Being so near the ranch country, the meat-packing industries in both of these cities are gaining rapidly each year. Note that there is also a Kansas City in Kansas.



Fig. 158. — The St. Anthony Falls at Minneapolis — some of the factories are seen in the distance.

On the river above Kansas City is St. Joseph, in Missouri; and below it is Jefferson City, the capital of that state. Farther west, in Kansas, are Topeka, the capital, and Wichita. Southwest of Omaha is Lincoln, the capital of Nebraska; and across the river, in Iowa, is Council Bluffs, a very active trading center. Several cities northwest of this point are chiefly important as trade centers. Find

some of them on the map. Locate DES MOINES, the capital and largest city of Iowa. Of what advantage is its central position in a level farming country.

In the Middle Atlantic States, Pittsburgh, and Wheel-5. Cities in the ing, on the upper Ohio, owe their importance largely to coal and iron, and to the fact that river boats can reach them. Farther down the river is CINCINNATI (Fig. 154), the largest river port in the state of Ohio, and a busy shipping and manufacturing center (Fig. 159). Besides pottery (p. 107), this city manufactures large quantities of iron, machinery, and Across the river, clothing. in Kentucky, are COVINGTON and NEWPORT (Fig. 154), both almost a part of Cincinnati, as Jersey City is almost a part of New York.

Farther north and east, in Ohio, are DAYTON and SPRINGFIELD, both noted for the manufacture of farm machinery. DAYTON, like Pullman in Chicago, makes a large number of cars, and is engaged in manufactur-

ing of many kinds. Columbus, the capital of Ohio, is an important trade center, and manufactures many carriages and wagons. Why should farm machinery, carriages, and wagons be manufactured in so many of these cities?

Down the river, below Cincinnati, is LOUISVILLE, the largest city in Kentucky. There are rapids in the Ohio at this point, but a canal leads around them. Besides



Fig. 159. — River boats on the Ohio at Cincinnati.

being a center for tobacco, like Richmond and St. Louis, Louisville manufactures iron goods, farming implements, flour, and leather goods. It is also a railway center.

EVANSVILLE, the largest river port in Indiana, is principally engaged in the manufacture of flour, machinery, and leather goods. INDIANAPOLIS, the capital and metropolis of Indiana, is in the midst of a splendid farming district. Like Columbus, it is a railway and trade center, and handles much grain, lumber, furniture, and many farming implements.

1. To what extent is the land level in the Central States? 2. What about forests and bowlders there? 3. Describe the temperature, giving Review reasons for the extremes. What is Questions meant by a continental climate? By an equable climate? 4. What about the rainfall? 5. State the importance of agriculture. Describe the farm in central Ohio, and the farm life. 6. To what extent is Indian corn raised in these states? 7. How is it cultivated and harvested? 8. What are its uses? 9. How extensively is wheat produced, and in what sections? 10. Describe wheat raising on the large farm mentioned. 11. What cities have been much influenced in growth by the wheat raised in the valley of the Red River of the North? Why? 12. What fruits are grown, and where? 13. What vegetables? 14. Where is tobacco raised? 15. What are the principal domestic animals raised, and where? 16. What can you tell about the fine stock in Kentucky, and the caverns there? 17. Name other important farm products east of the arid lands. 18. What is meant by the Great Plains, and what is their extent? 19. How is irrigation carried on, and what are the products of the irrigated farms? 20. Tell about ranching; its extent; how it is carried on; and a ranchman's life. 21. What is the extent of forests in these states, and what kind of trees are there? 22. Describe the method of lumbering, and name the centers of the industry. 23. What about fishing in these states? 24. Where are the coal mines, and what is the kind of coal? Where are oil and gas found? 25. Why is gas an especially cheap fuel? 26. Locate the Lake Superior iron ore district, and tell about its importance. 27. Why must the ore be taken elsewhere to be smelted, and from what ports? 28. How is the ore loaded on to the vessels, and where is it taken? 29. What are the uses of copper? 30. Where is copper ore found? 31. How is the copper obtained from the ore, and where is it sent? 32. How have the copper mines influenced settlement? 33. What about building stones in these states?

34. Name other mineral products, and tell where found. 35. What are the leading kinds of manufacturing from the agricultural products? 36. Name the principal kinds of manufacturing from forest products, and the chief cities engaged in them. 37. What about the importance of the manufactures from oil? From ores? 38. What about manufactures from clay and limestone? 39. What conditions favor the transportation of goods? 40. Name and locate the principal cities along the Great Lakes. 41. State the chief facts about Duluth and Superior. 42. Outline the history of the region about Chicago. State the advantages of the site of the city. 43. Give an account of meat packing and related industries there. 44. What other kinds of manufacturing are prominent in Chicago? 45. What means of transportation are provided in the city? 46. How is the sewage taken care of? 47. What about education in this vicinity? 48. What can you tell about Milwaukee and Racine? 49. Detroit and Ann Arbor? 50. Cleveland and Toledo? 51. Name and locate the principal cities along the great rivers. 52. For what is St. Louis especially important? 53. St. Paul and Minneapolis? 54. Name smaller cities on the Mississippi River and tell of their importance. 55. Locate and tell what you can about the various cities along and near the Missouri River. 56. State the principal facts about the cities in the Ohio Valley.

Ohio (O.). 1. Name the four largest cities (Appendix, pp. 427-428). State the advantages of each location. 2. What other cities of Ohio are mentioned? For what is each important? 3. Why is there much manufacturing in this state? 4. What other industries are mentioned in the text? 5. Examine the maps (Figs. 249-259) in order to see what crops are especially important in Ohio. 6. In what ways are the cities of Ohio dependent upon New Orleans and New York? How are the latter cities dependent upon those in Ohio? 7. Of what service to Cleveland and Toledo is the Eric Canal? 8. Draw a sketch map of Ohio like that of Maine (p. 47). As you study each state, do the same.

Indiana (Ind.). 9. Examine the maps (Figs. 249-259), to see what crops are produced in Indiana. 10. What minerals are found here? 11. Which is the largest city? For what noted? 12. What other cities are mentioned? 13. What are the industries of Indiana? 14. Of what importance was the fact that a large part of this section was treeless when discovered?

Kentucky (Ky.). 15. Why should this state be better adapted to tobacco raising than Ohio? 16. 0f what importance is the limestone of Kentucky? 17. Where are most of the cities? Why there? 18. What products are mentioned from Kentucky? 19. Which is the largest city? For what

important? 20. What other cities are mentioned?

Illinois (Ill.). 21. Examine the maps (Figs. 249-259) to see what crops are especially important. 22. Why is there much manufacturing in Illinois? What kinds are carried on? 23. Of what value is the lake to manufacturing? 24. State the reasons why Chicago has developed so greatly. 25. What other cities are mentioned in this state? For what is each important? 26. Which of the four states so far reviewed is the largest? Which smallest (Appendix, pp. 425-426)?

Michigan (Mich.). 27. What lakes does this state border? Of what advantage is this? 28. What disadvantage can you see in the fact that water separates the lower from the upper peninsula of Michigan? 29. Ice stops canal traffic in winter. What effect must this have? 30. Into what waters does this state drain? Contrast this drainage with that of the other states. 31. Where are most of the large cities? Why there? 32. For what is each important? 33. Give the reasons for the location of Detroit? 34. What are the important products of Michigan?

Wisconsin (Wis.). 35. Which is the largest city in this state? For what important? 36. What other cities are mentioned in the text? What is done in each? 37. Compare Wisconsin with Michigan in relief; in mineral products; in crops; in the size of cities. 38. What effect must the lakes have upon the climate? Would this influence be greater or less than in Michigan? Why? 39. If there were coal beds in northern Wisconsin, what effect might the coal have upon Chicago, Cleveland, and the coal mining of Pennsylvania?

Minnesota (Minn.). 40. Where does the Mississippi River rise? 41. What oceans receive the waters that fall upon Minnesota? Give proof. 12. What manufacturing industries are carried on in this state? 43. What crops are raised? 44. Name the three largest cities, and tell how each is important. 45. How does the largest compare in size with Boston? With Cincinnati?

Iowa (Ia.). 46. Examine the maps (Figs. 249-259) to see what crops are raised in this state. 47. What other important industries are carried on? 48. Name the largest cities. For what are they noted? 49. Much corn is raised here; what is done with it?

Missouri (Mo.). 50. Examine Figures 249-259 to see how the crops of Missouri differ from those of Minnesota. Why this difference? 51. Why are so few large towns found in the southwestern part? 52. Name and locate the two largest cities. For what is each important? 53. What other cities are mentioned? 54. Find the population of St. Louis;

compare it with that of Philadelphia and Boston. 55. Give five reasons for its great size.

Kansas (Kan.). 56. Why are the cities in the eastern part? 57. What are the industries of the West? Why? 58. What are the leading crops in Kansas (Figs. 249-259)? What other industries are important? 59. Name the principal cities. For what is each noted?

Nebraska (Neb.). 60. How do the industries of Nebraska compare with those of Kansas? Why? 61. How are these states alike in regard to location of cities? 62. What cities in Nebraska are mentioned? 63. For what is Omaha noted?

North and South Dakota (N.D. and S.D.). 64. These two states once formed the territory of Dakota. Suggest reasons for making two states out of the one territory. 65. Compare the industries of the two states with those of Nebraska and Kansas. 66. Look at the corn and wheat maps (Figs. 249 and 251) to see where most wheat and corn are produced. Is North Dakota more or less important than Kansas as a corn-producing state? Answer the same for wheat. Why is this so? 67. Of what advantage would it be to Fargo if a deep river extended from that city to Duluth? 68. How do the Black Hills increase the wealth of South Dakota?

69. Which state is the largest in this group (Appendix, pp. 425-426)? Which smallest? Compare each of these in area with Pennsylvania; with Texas. 70. Which of the Central States has most inhabitants (Appendix, p. 425)? Which fewest? Compare each of these in population with New York; with Texas. 71. Find the largest ten cities (Appendix, p. 426).

1. Find how much earlier in the fall frosts come in Minneapolis than in Memphis. 2. How do farms that you have seen differ from the Ohio farm described in the text? Suggestions 3. How does the wind often help ranch cattle to obtain food in winter? 4. What are some of the adventures that cowboys experience? 5. Why are coal and brick especially valuable in a prairie country? 6. Visit a brickyard, and write a description of brickmaking. 7. See how long a list you can make of articles manufactured partly or wholly out of copper. 8. Do the same with regard to lead. 9. How are the advantages of the location of Chicago somewhat similar to those of Atlanta? 10. Make a drawing of the great water route from Duluth to New York City, and put in the leading cities located upon it. What states border on this route? 11. Make a drawing of the Mississippi, Missouri, and Ohio rivers, and include the leading cities. What states do these rivers border or cross? 12. Make a sketch map of the Central States, including the principal lakes, rivers, and cities.



Fig. 161. - Relief map of the Western States.

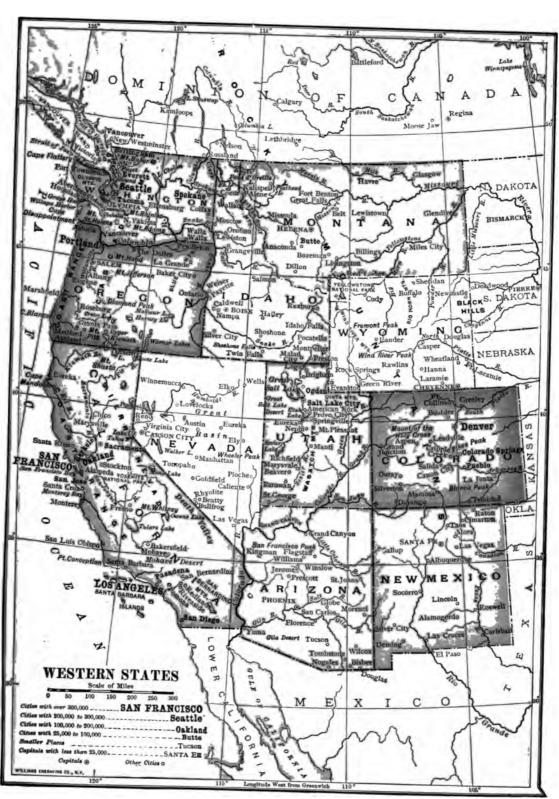
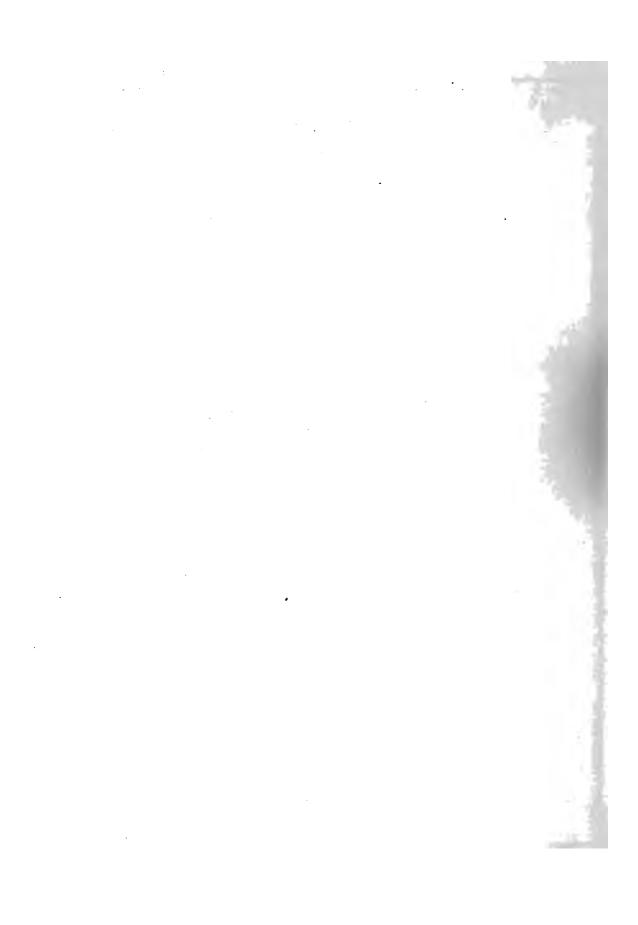


FIG. 160.



6. Western States

mpare this group with each of the other n relief (Fig. 42); in area, and in population (Appendix, pp. 425-426)? 2. Which is the largest state? Which the smallow does each of these compare in size with rania? With Texas? 3. What becomes water of the Humboldt River? 4. Name argest rivers. Where does each rise, through the store it flow, and where does it empty? the principal mountain ranges; the plateaus). 6. Where are the largest cities? Why 7. Find the Yosemite and Yellowstone 8. Name the states having a seacoast.



—These powerful streams of water wash the gravel away, and the collects in the bottom of troughs or sluices. This is called hylic mining.

e those states whose waters drain mainly or into the Pacific; into the Atlantic; into the asin.

le the pioneers were settling the s of the Central States, almost nothing was known about the Far West. The Spanish had taken ion of the southern portion, and of their names, such as New Mexico, ageles, and San Francisco are still to and there. The northern portion, Oregon, was claimed by Englishing people, and there was a great ration to the Willamette valley in

1848 gold was discovered in the stream gravels of California. For ages the precious metal had lain scattered through

the rocks of the Sierra Nevada Mountains. Then, as the mountains slowly crumbled, it had been washed into the streams. Being very heavy, it dragged along at the bottom, lodging here and there in the stream beds. It was such gold as this that was first found.

As the discovery became known, tens of thousands of persons in the East left farms, factories, and homes in a mad 2. Effect of the rush for the gold fields. Some discovery sailed all the way around South America; others crossed the Isthmus of Panama; but many traveled overland, running the risk

of attack from Indians and of death from thirst. There were then no railways west of the Mississippi, and the journey was long, tedious, and dangerous.

The discovery of gold quickly drew so many persons to California that the territory was able to enter the Union as a state in 1850; and, as the search for the precious metal was carried farther and farther, the entire West soon became explored and settled. Railways were

built across the mountains (Fig. 280), and many industries, such as farming, lumbering, and manufacturing, have followed mining. Indeed, in many sections these industries are now much more important than the mining.

The Western States are made up almost entirely of plateaus and mountains. Most of the surface is more than a mile above sea level, while some mountain peaks are two miles or more in height.

Surface of the country

1. The three principal mountain systems

The extreme eastern portion is a part of the Great Plains (p. 5), which reach to the very base of the *Rocky Mountains*. These mountains (Fig. 42) extend entirely across our country, into Mexico on the south, and Canada on the north. They

consist of a large number of ranges and ridges, which reach their greatest height in Colorado. A long distance farther west, and almost parallel with the Rockies, is another system of mountains, called the Sierra Nevada in California and the Cascade Ranges in Oregon and Washington. Still farther west, and close to the coast, is a third system known as the Coast Ranges, some portions of which rise directly out of the ocean. The highest peak in these mountains is Mount Whitney, in California, the loftiest mountain in the United States proper.

Between the Rocky Mountains and the Sierra Nevada-Cascade ranges, is a broad 2. The valleys valley dotted with numerous short mountain ridges, extending north and south. There is a plateau at each end, and a broad basin of interior drainage between, in which there are a number of salt lakes. It may be divided into three parts (Fig. 42): (1) The great Columbia Plateau of Idaho, Oregon, and Washington, on the north; (2) the Colorado Plateau of Arizona and Utah, on the south; and (3) the Great Basin of Utah and Nevada between the two. The numerous short mountain ranges in the Great Basin are called the Basin Ranges.

Between the Sierra Nevada-Cascade system and the Coast Ranges there is an area of lowland (Fig. 41). In California, Oregon, and Washington this forms a fertile valley; in Washington it is partly occupied by Puget Sound.

Throughout much of this Western country volcanoes were once very active (p. 4).

3. The volcanoes, and their peaks are extinct volcanoes. Among these are Mount Rainier (also called Mount Tacoma) (Fig. 163), within sight of TACOMA and SEATTLE, Wash.; Mount Hood, not far from Portland, Ore.; and Mount Shasta, in northern California. Other fine volcanic cones in this region are Mount Baker, Mount Adams, and Mount St. Helens.

Lava covers hundreds of thousands of square miles in these Western States, and its decay has produced a soil which is very fertile. The lava has also had an important effect upon the deposit of valuable minerals. Veins of gold and silver usually occupy cracks in the rock, caused by the breaking



Copyright, 1906, by A. H. Bernes. Fig. 163. — Mount Rainier from Tacoma. This beautiful, snow-capped peak is 60 miles away.

of the rock layers while the mountains were forming. Through these cracks water passes, often heated so hot by the buried lava that it is able to dissolve mineral matter and carry it along. As the water cools, on nearing the surface, it cannot hold all of this mineral in solution, and therefore deposits a part of it on the walls of the cracks. In this way many valuable veins of metal have been slowly formed, and it is for those that thousands of miners are now searching. Hot water still flows from the earth in many parts of the West, the section most noted for this being the Yellowstone Park. In this water there is much mineral matter in solution, and in some cases even small quantities of gold.

In the East, there is little variety in the climate, even over large sections; but in the West the variety is great. The climate Even in a single state there are 1. Extent of often great differences. Nearly and lands everywhere, excepting in the Northwest and on the mountain slopes and plateaus, it is so dry that no agriculture is possible without irrigation. Almost one fifth of the United States is unfit for agriculture without irrigation, and most of this arid land is in these Western States.

Parts of southern California, Nevada, Utah, and Arizona, and smaller portions of each of the other states, are true desert. Near the western shores of Great Salt Lake, for example, not a tree nor even a shrub is to be seen for miles and miles (Fig. 164). The entire surface is covered by a glistening whitish substance called alkali. In other regions dreary wastes extend for hundreds of miles, broken only by a few cacti and other arid land plants, by rocky ledges, and by occasional mountain peaks.

The scarcity of streams on the map in and near Nevada shows clearly the lack of water there. That section is a real basin, having a rim higher than the center, and for that reason it is called the *Great Basin* (Fig. 42).

tions, as in the high mountain valleys and in the wheat district of central and eastern Washington and Oregon.

Throughout the West the higher mountains and plateaus receive enough rain for crops. That this is true is (2) The higher proved by the numerous large plateaus, and rivers which have their sources the mountains there. Name and locate those flowing from the Rocky Mountains into the Mississippi. Trace the Rio Grande and its principal tributary, the Pecos; also the rivers that empty into the Pacific Ocean. Although long, many of these rivers are shallow, and during the summer season some, like the

Rio Grande, almost disappear in the middle part of their course. Others, like the Columbia and Sacramento, are navigable in parts of their course.

The importance of the higher plateaus in condensing vapor is well shown by the highlands of central Arizona. A person

traveling eastward from Los Angeles, on the Atchison, Topeka, and Santa Fé Railway, finds himself, upon reaching the Colorado River in the evening, in the midst of a desert about five hundred feet above sea level. If it is summer, the thermometer may register from 110° to 120° in the shade, for this is the hottest region in the United States; indeed, it is even hotter than many parts of the torrid zone.

After leaving the river, the train slowly winds its way up onto the Colorado plateau, seven thousand feet high, and the next morning the almost unbearable heat of the previous day is replaced by a delightfully cool air. As if by magic the scene is changed; the barren wastes of sand are gone, and a green forest is on all sides. This change is due to the simple fact that the air is cooler on the high plateau, and the vapor can therefore be condensed into rain, while there is less evaporation of the water in the soil.

Finally, in the desert itself are many oases where water for irrigation is at hand. By aid of



Fig. 164. - The desert near Great Salt Lake in Utah.

Some of the few streams flow into shallow salt lakes, which are growing more and more salt as the years pass; others dry up and disappear in the sand.

Along the northwestern coast the damp west winds from the ocean bring so much

2. The well-watered sections
(1) The north-

western coast

vapor that the rainfall is heavy. Indeed, along the coast of Washington the rainfall is heavier than in any other part of the United States (Fig. 303), the

greatest amount falling in winter. There is also plenty of rain in western Oregon and the northern half of California.

Being robbed of its vapor in crossing the mountains, the air descends on the eastern side quite dry; and there agriculture without irrigation is possible in only a few sec-

water, even the most barren land may be transformed to a beautiful garden (Fig. 165).

Every one of the Western States con-

Mining
1. Kinds of
minerals, and
ownership of
mining lands

tains mineral deposits of some kind, such as gold, silver, copper, lead, mercury, petroleum, and coal. This region is now one of the most im-

portant mining districts in the world.

to get the gold out of these gravels, but in some places these ancient stream beds have been covered with a thick 2. Methods of layer of hard lava. Then it mining gold is necessary for the miners to tunnel under the lava in order to obtain the gold.

The first miners obtained the gold in a very simple manuer. Placing some of the stream gravel in a pan of water, they rocked the gold in a very simple manuer. (1) "Panning"



Fig. 165. — This view, near Pasadena, California, shows the barren arid lands, in the midst of which are extensive orange groves, irrigated by water from the mountains.

Much of the land is still owned by the government, and all ore that is discovered upon it belongs to the finder. Any citizen of the United States may become the owner of a valuable mine, if he can find one on government land. With such a hope, hundreds of prospectors are digging tunnels into the earth whereever they believe they may obtain ore. In most cases they are doomed to disappointment; but they keep trying, moving from one place to another, always hoping for a rich reward. Sometimes valuable ore is found, and then a poor prospector suddenly finds himself a rich man.

Much gold has been discovered in the river gravels. In many regions it is easy

it back and forth in such a way as to cause the heavier particles of gold to sink to the bottom of the pan, while the lighter minerals on top were washed out and thrown away. Most of the gold was in very small flakes, but sometimes the miners found large lumps of gold, called nuggets, worth hundreds of dollars. This method of washing away the gravel in pans was called "panning" the gold.

Very soon the miners tired of such a slow process. They then invented the far more speedy plan of hydraulic mining. By this method (2) Hydraulic a large, powerful stream of water, mining from the nozzle of a pipe, is turned against a gravel bank, washing the gravel rapidly away (Fig. 162). The water, with the gravel and gold, then runs into

teeply aloping troughs, or sluices, the bottoms of which are made rough by many cleats. The rushing water carries the gravel over these cleats to the end of the sluice, where it is dropped; but the gold, being so heavy, settles to the bottom of the sluice and is caught behind the blocks. Later it is emoved and carried away to be sold.

In this way much gold has been obtained from the gravels of California and other Western States. For example, even the gravel out of which some of the streets of Helena, Mont., are built has been washed for gold in this way.

The method by which most gold is now obtained, is to dig into the solid rock, as in 3) The common the case of other metals. nethod now shafts and tunnels follow the reins from which the gold in the gravels mme. In the veins, the metal is found nixed with other minerals which are of ittle or no value. This mixture forms rold ore, and there is so little gold in such are, and it is in such small grains, that one may spend days in a mine looking for it without seeing any. The gold ore, like other ores already studied, must be crushed and melted before the gold itself can be obtained.

One of the most remarkable gold-mining districts in the world is that of the Comstock Lode at VIRGINIA CITY, ing districts Nev. The vein is irregular (1) In Nevada in richness, some parts, called "bonanzas," containing much gold and silver, while elsewhere it is quite barren. So much metal has been obtained from this single vein that Nevada at one time produced more silver than all the other states put together, and more gold than any other state in the Union. So many people moved there then that Nevada territory became a state in 1864; and Virginia City, though in the midst of a desert, grew to be a thriving city.

As the mines went deeper, hot water, with a temperature of 170°, poured in and caused the temperature in the mines to be almost unbearable. Ice-cold air was forced in, and machinery and mules were made to do most of the work; but even then men fainted at their posts. Partly because of the difficulty of mining, and partly because of the failure to

discover new bonanzas, some of the mines were abandoned and people drifted away, so that for a while the population of Nevada decreased.

With the discovery of many rich new mining fields, and the re-opening of old mines, new towns have sprung up, and Nevada is again the center of great mining activity and one of our most important mining states. It is one of the leading states in the production of gold and silver. Tonopah, Goldfield, and Bullfrog are important and rapidly growing mining towns. These and other cities are now more important than Virginia City.

At present Colorado produces more gold than any other state (Fig. 272), and it ranks fourth in the production of silver. In addition to these (2) In Colorado metals, Colorado produces much copper, lead, and iron. Among the mountains, one sees many mines (Fig. 166); but one of the most noted mining districts is near LEADVILLE, a city at an elevation of over ten thousand feet above the sea. Gold, silver, and lead are mined in this locality.

Another well-known mining camp in Colorado is CRIPPLE CREEK. A few years ago there was no town here, and the gold ore, which later proved so valuable, was not recognized as ore by the prospectors. Finally, when some one discovered the gold, thousands of people rushed in from all directions, and a city sprang up almost in a day. This has been true in many other places. Sometimes the cities have continued to grow, but if the mines have given out, the mining centers have been abandoned almost as rapidly as they grew.

Iron is found in several of the Western States, but as yet it is not mined to a great extent except west of Pueblo, in Colorado.

The western half of Montana is another noted mining section, and this state is now second in the production of silver and copper, while it also supplies much lead, gold, coal, and other mineral products, including precious stones. Helena has already been mentioned

(p. 123), but no portion of the state is now so important for mining as the region in and near BUTTE (Fig. 182). There the principal metal is copper, although some gold and silver are mixed with the ore.

More copper has been produced at the Butte mines than in any other mining district in the world. The mines are very extensive, reaching several thousand feet into the earth, and having tunnels through which one might wander for days without finding his way out.

The mining industry of Arizona is also very impor-(4) In other tant, much cop-Western States per, silver, lead, and gold being produced. Arizona now ranks first among the states of the Union in the production of copper. One of the largest cities in the territory is Tucson (Fig. 167).

Another large city is BISBEE, the center of a noted copper mining region and rivaling Butte, Montana. There is much smelting at DOUGLAS, and all these cities, as well as PHŒNIX, are trade centers for neighboring mines and irrigated farms.

There is much mining, especially of gold, silver, copper, and lead, in each of the

other Western States. California ranks second among our states in the production of gold, Utah third in silver and lead, and Idaho second in lead and fifth in silver. The Cœur d'Alene mining district



Fig. 166. — A view in the mining district of Victor, Colorado. There are mines beneath these buildings, and the waste rock removed from the tunnels form huge banks near them.

of northern Idaho is the most important silver-lead district in the country. Spo-KANE, in Washington, is the trade center for this noted mining region, which has had much to do with the remarkable and recent growth of this city. In addition to the metals mentioned, these states, as well as Wyoming and New Mexico, produce



Fig. 167. — Tucson, Arizona, which owes much of its prosperity to the rich mines in the neighboring mountains.

large quantities of other valuable minerals. There are many important mining towns and mining camps in each of these states.

Coal, some of it of excellent quality, occurs in many sections of the West, being

4. Coal, petroleum, and other Colorado produces more than any other Western state, ranking seventh among the states of the country in this production. But other Western States produce considerable amounts: among these Wyoming and Washington are next in importance to Colorado. Nearly every one of the Western States has coal beds which are bound to be of great value in the future.

Petroleum is another valuable product in the West. Enormous quantities have been found in California, and that state now produces more than any other in the Union. So much is produced, in fact, that it is used on railway engines, in place of coal.

There are many other mineral products in the Western States, including building stones and semi-precious stones, which are obtained in California, Arizona, Colorado, Utah, Nevada, and other states.

Mining gives rise to much lumbering in many parts of the West. The Butte mines alone consume millions of feet of lumber per year. In the mines heavy, upright timbers are placed together, on each side of a tunnel, to prevent the rock from caving in. Because of the great pressure upon them, timbers more than a foot through are often broken.

While a great portion of the Western country is arid, the mountains and some a where it is of the higher plateaus bear extensive forests. Thus the mines, which are usually among the high mountains, are generally supplied with little difficulty; for the logs are easily brought down to them.

The most noted lumber region, however,

is on and near the western coast from central California northward. Here, in the damp, equable climate, the giant redwood, fir, cedar, and spruce trees grow to great size, the redwood being contined to California, where there are extensive forests of these big trees (Fig. 198). There are immense forests of giant trees all the way from central California to Canada. the logs in Maine and Michigan are rarely more than two or three feet through, many in Washington and Oregon are from six to fifteen feet in diameter, and some in California are very much larger.

A visit to a lumbering camp in western Washington will show that, owing to the size of the trees, and to the climate, the work is carried on very differently from lumbering in Maine (p. 33). The men are able to work both winter and summer. They select a tree, which perhaps towers upward for two hundred feet, that is, higher than most church steeples. Two men saw and chop at this tree until the giant begins to quiver, and when finally it falls, a wonderful sight may be seen. The tree bends slowly over, quickens its movement, then falls to the ground with a mighty crash, breaking good-sized trees in its way, as if they were twigs.

After the branches are cut off, the tree is sawed into sections of different lengths (Fig. 168), as twenty-four, thirty-two, or forty-eight feet, and these are dragged to a railway which leads up into the forest. There the logs are piled upon flat cars and taken to the mills, a single section sometimes occupying an entire car (Fig. 169). From five to fifteen thousand feet of lumber, or enough to build a small house, may be obtained from a single large tree (Fig. 170).

Many of the logs go to TACOMA and SEAT-TLE, where there are enormous sawmills. There is such an abundance 4. What is done of wood that in some places with the logs thick planks are used for paving the streets; and wood is burned as a fuel in locomotives, and in the lumber mills. Such enormous quantities of lumber are obtained from these forests, and so cheaply, that it is sent even as far as the Atlantic coast. The Northwest is now one of the greatest lumbering regions in the country, and all the cities there have some share in the industry. Much lumber is sent away by boat from PORTLAND and ASTORIA, but even more goes from the cities of Puget Sound. Besides TACOMA and SEATTLE, EVERETT and BELLINGHAM are noted for their lumber industry. With so

of timber will be preserved for use in the future; for it is hardly fair that we should leave no timber for those who come after us. In addition, the forests are of value in preventing the rapid running off of the water in streams; thus they help to regulate the



Fig. 168.— Lumbermen at work in the forest of Western Washington. Note in the foreground the donkey engine used for drawing logs.

much lumber it is natural that there should be extensive manufacture of shingles, doors, and other wooden articles.

A great deal of the forest of the West is on government land, and to prevent it from 5. Porest reserved being wasted, our government has set apart what are called forest reserves (Fig. 265). That is, the forest is kept, or reserved, by the government, so that no one can cut down the trees without permission. In this way a supply

supply of water for manufacturing, irrigation, and other purposes.

Although there are few fishing banks along the western coast of the United States, there are some on which valuable food fish are found. Other kinds of fish are caught along the coast, or are found swimming in the surface waters; and the oyster thrives in the shallow waters at the head of Puget Sound.

Large numbers of cod and halibut are

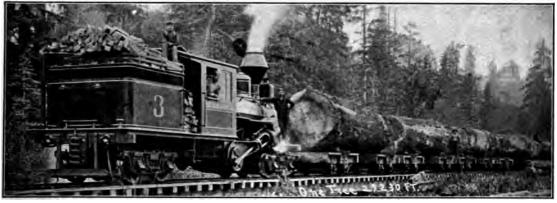


Fig. 169. — A train drawing lumber out of the forest of western Washington. Each section of a log occupies an entire car, and all the logs in the picture are parts of a single tree.

British Columbia and Alaska, and many vessels go there, especially from Seattle. Not | where they are packed in cans (Fig. 171).

all the fish that are caught are eaten by the Western people; some are shipped to other parts of the country, even to Eastern cities. Fresh halibut, kept on ice in refrigerator cars, are sent from Seattle to many places in the East.

The most important fishing industry, however, is that of salmon catching. This fish, like the shad of the East (p. 51), spends most of its life in the ocean, but passes up the rivers to spawn, or lay its eggs, in fresh water. As they are going toward and up the rivers, the salmon are Fig. 170. — The end of a log cut caught in great numbers, and some are shipped away in ice, even across the con-

in front of it.

caught on the banks and along the shores of | points along the lower Columbia, and to Bel-LINGHAM and other points on Puget Sound,

There is extensive farming in

Washington and Oregon, east of the Cascade Agriculture
Ranges, one of
1. In the North the finest west and Califarming fornia regions in the United States. This is a noted wheat country (Fig. 172), like the valley of the Red River of the North, and some of the farms are even larger than the one described on page 97. Mile after mile, in Oregon and Washington, are fields of waving grain, which, because of the very fertile soil, yield enormous crops. Hay, barley, corn, oats, fruits, vegetables, and farm animals are also raised. During from the forest of western the harvest season the air in most Washington. You can see how sections is so dry that both grain large it is by the men standing and hay may be left out of doors

tinent. Others are sent to the numerous | for weeks with little danger of being canning factories at ASTORIA and other | spoiled by rain. WALLA WALLA, Wash-



Fig. 171. — Interior of a salmon cannery on the Columbia River. A salmon hangs from the roof; and there are thousands of cans of salmon piled up on the floor.

ington, Lewiston, Idaho, and Pendleton, Oregon, are situated in this great wheat region.

Near the eastern base of the Cascade Ranges the climate is so dry that irrigation is necessary and there, as in the Yakima Valley, is found a wonderful fruit country. On the western side of the Cascade Ranges there is abundant rainfall and there fruit, vegetables, and grains, as well as hops, are extensively produced. The entire Pacific coast region, from Canada to Mexico, is

famous for its excellent fruit. In the north berries, apples, pears, plums, cherries, grapes, and other fruits are produced; but in the south, in the Great Valley of California (p. 120), besides these fruits there are groves of oranges, lemons, olives, and figs, as well as other trees which thrive only in warm climates. Sacramento, Stockton, and Fresno are the leading cities of the Great Valley, which, throughout its whole length, is occupied by a succession of wheatfields, vineyards, orchards, and nut and fruit

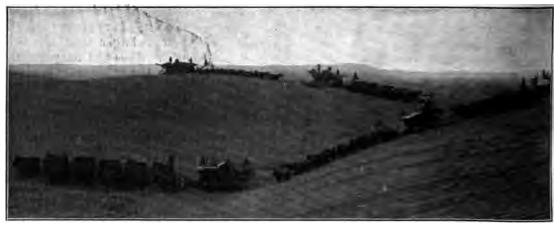


Fig. 172. — Cutting wheat in the fertile farming district of central Washington. By these machines the wheat is cut, threshed, and sacked all ready for shipping.



173. — An irrigating ditch near Denver. The water is led from a river, and by it the land, otherwise useless for agriculture, is made to yield rich harvests.

s; but in the central and southern | ns, where the rainfall is light, irriga-3 provided as described in a later sec-California fresh fruit is shipped in ious quantities to Eastern cities, while

ture; but the only way in which farming is possible in most other parts of the West is by means of irrigation.

The influence of irrigation is well illustrated in the region near Denver, which

lies in the midst of an arid plain. This plain is crossed, however, by the by irrigation South Fork of (1) How irriga-the Platte River, tion is planned near Denver from which a

ditch, as large as a canal, is led out upon the plain (Fig. 173). The river itself has a rapid fall, but just enough slope has been given the ditch to allow the water to flow. Thus the ditch soon runs on a higher level than the river, and the land between it and the river is lower than the ditch.

Water from the ditch may then be led out over these

fields to irrigate them. For this purpose ditches branch off from the main canal, and each of these is divided and subdivided the rainfall is sufficient for agricul- to supply farms along its course. When



4.- A farmer irrigating his field. The water from the irrigating sh is allowed to run along the furrows and thus wet the seeds that re just been planted.

and canned California fruits are to be | in most of our grocery stores.

ere are a few other, smaller sections

a field needs water, one of the smaller ditches is tapped and the field is flooded; or else the water is led into little furrows a few feet apart (Fig. 174). The method followed depends upon the kind of crop that is under cultivation. As there is danger that the supply of water may not last through the summer, reservoirs are built to store the water of the spring freshets; and when needed, this is allowed to flow into the ditches.

alfalfa. The latter, like clover and hay, is fed to stock. It is one of the most important crops of the arid regions, where there is much demand for fodder for cattle, hogs, sheep, and horses.

Without irrigation, crops could not be grown in this vicinity. It would then be necessary to bring farm products from Kansas, Nebraska, and other states, a distance of several hundred miles. It is evident,



Fig. 175. — An orange grove in southern California on land which not many years ago supported only the sparse vegetation of an arid climate.

Of course such an arrangement is expensive, and each farmer must pay for his water at a certain rate, as each tenant such irrigation, of a house in a city pays for and its advanhis water or gas. That a farmer can afford to pay for water, however, is well shown in this case; for on the upper side of the ditch, which cannot be reached by the water, the land is fit only for grazing, while on the lower side there are rich fields of grain, vegetables, and

therefore, that irrigation must have had a great influence on the settlement of the West. Without it Denver and Pueblo would not be so important as they are; and, because of the expense of carrying food so far, scores of mining towns would not exist. Wherever the waters of the rivers are led out over the fields, people form settlements, and even towns and small cities. That is the case at Greeley, in Colorado; Cheyenne and Laramie, the principal

cities in Wyoming; and scores of other places.

One of the best farming districts in the arid lands is in Utah. A large part of that s. In Utah, by state was once a desert. But irrigation extensive areas have been entirely changed by the Mormons, a religious sect founded in New York, in 1830, by Joseph Smith.

Under the leadership of Brigham Young these people migrated into the then unknown West and settled a few miles from Great Salt Lake. Here they commenced to build Salt Lake City, which is now one of the most beautiful cities in the country. They also began to raise crops by irrigation, and to plant fruit trees, and thus converted portions of the desert waste into beautiful gardens.

There are now in Utah many who do not accept the Mormon religion. Agriculture is no longer the sole industry. As you have already learned (p. 124), many rich mines have been opened in this state. There are numerous busy towns and cities, the one next to Salt Lake City in size being Ogden, which lies north of the capital.

Central and southern California is a third section noted for its extensive irrigation.

is central and southern California, by irrigation

(1) The climate here, and the method of irrigation

The region is far south, and its shores are bathed by warm ocean waters, so that the climate is delightful. But the land, although very fertile, is arid by nature, and in places almost a deport (Fig. 165).

almost a desert (Fig. 165). Vapor condenses on the mountains, however, and forms streams whose water is stored in immense reservoirs and led into long irrigating ditches. Other irrigating ditches are supplied with water from wells. The bringing of water to the parched soil has changed even the desert parts of this region into one of the garden spots of the world. The rainfall increases toward the north, and irrigation becomes less and less necessary as one goes northward. Thus

there is every gradation in California, from farms, orchards, and vineyards that could not exist without irrigation, to those, already described, which require no irrigation.

Oranges, lemons, peaches, pears, grapes, figs, olives, walnuts, almonds, and many other kinds of fruits and nuts, now grow here in abundance.

Among the fruits the most common is the seedless navel orange. In these beautiful valleys nearly every home has its orange trees, and in many cases the house is entirely surrounded by them (Fig. 175).

Thousands of persons from the East were first attracted to California by the mild and



Fig. 176.— An orange tree in southern California. Notice the snow on the mountain only a few miles away.

healthful climate; then, seeing the opportunity for fruit raising, they planted orchards and orange groves. In those valleys which are too cool for oranges, thousands of acres are devoted to other fruits, such as prunes, apricots, grapes, pears, and apples. Land that a few years ago was worth, at best, only a few dollars an acre, now supports flourishing groves of fruit.

The groves of all kinds are planted in

straight rows, and the ground is kept so clean by frequent (3) Care of the plowing that fruit, and what scarcely a weed is is done with it to be seen. In this respect the groves present a very different appearance from the orchards, overgrown with grass and weeds, that are often seen upon farms of the East.

The winter season is the harvest time for oranges, which are picked from about the middle of November until February or later (Fig. 176). They are cut from the trees, sorted according to size, then packed in boxes and shipped away.

Immense quantities of peaches, prunes, apricots, grapes, figs, and other fruits are dried, usually by exposure to the sun. In the Eastern States fruit would soon decay if left out of doors, but in the sunny climate of the arid lands it dries quickly. Much fruit is also canned, and many grapes are made into wine. California wine is of such high quality that it is sent not only to the East, but even to Europe.

The value of irrigation is well shown here. Before irrigation was introduced into southern California, this region could



Fig. 177. — Desert land in the Yakima Valley, covered with the worthless sagebrush. Such land without irrigation is of almost no value; but compare this picture with Figure 178.

support very few people. Now, in Los Angeles and vicinity, there is a population of over three hundred thousand.

The description of these few places serves to show the importance of irrigation in the West. It is not to be understood, however, that these are the only noted irrigated sections, for there are many others. Most of the largest and best known are along the large rivers. For example, irrigation is extensive along the Yellowstone and Missouri rivers and their tributaries in Montana; along the Snake River and is tributaries in Idaho; along the Yakima River (Fig. 177 and 178), and other streams tributary to the Columbia River in Washington,

Columbia River in Washington, Oregon, and Idaho; along the Gila and Salt rivers in Arizona; along the Rio Grande and Pecos rivers in New Mexico; and along the Sacramento, San Joaquin and other rivers in California. The map (Fig. 258) shows that there are many irrigated sections.

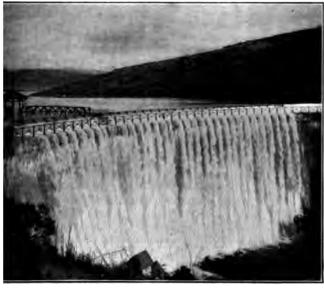
The irrigation of Arizona deserves especial mention, partly because of the extensive irrigation works that the government has constructed there, and partly because of the climate. One of the greatest irrigation works undertaken is the Rosevelt dam in the Salt River, which will supply water for a large area near Phænix. The climate near



Fig. 178. — Desert land in the Yakima Valley which only a few years ago was covered with sagebrush like that in Figure 177. Now, being reached by an irrigation ditch, it supports a flourishing young peach and apple orchard and is worth \$1000 an acre.

ity and Tucson is such that even semi-tropical are produced. Here are raised oranges, is, grape fruit, figs, olives, pomegranates, and dates. The warm, dry climate also makes this an important health resort.

duced wherever possible, and every
year new irrigation systems
are being built, some of them
at great expense. Since much
he arid region is public land, the
ed States government is aiding in this
There is, in fact, a special departof the government in charge of it,



9. — A masonry dam built by the United States government, forming a lake in which water is stored for use in irrigation during the summer.

every year millions of dollars are spent in this way.

iormous dams are built (Fig. 179), ing large lakes in the mountain valand these are filled in spring when the melts. Then, in summer, when the need water, it is let out of the reserinto the irrigation canals. In this the amount of farm land in the arid t is being greatly increased. This is of the most important works in which government is engaged.

There is so little rainfall in the arid portion of the West that only a small part of the land can be irrigated. 7. Ranching This leaves most of the coun- (1) Kinds of try for grazing; and wherever animals raised there is water enough for the animals to drink, cattle, horse, and sheep ranches are found. In some parts, especially where the grass is scanty, herds of goats are raised.

The manner in which cattle ranching is carried on in Dakota was described on pages 99-101, and ranching is carmuch the same plan is followed ried on

for cattle and horses in all the Western States. Sheep ranching is somewhat different, as may be seen from the ranches about BILLINGS, Mont.

A good-sized sheep ranch has from twenty-five thousand to forty thousand head of sheep. These, like cattle, may feed partly upon government land, or the "range," and partly on land fenced in and owned by the ranchman. During the coldest winter weather, when the snow may be so deep that the sheep cannot obtain food, they are often driven into protected corrals and fed on alfalfa. The fierce winds of the open plains help them, however, by drifting the snow and thus leaving open patches where they can find grass.

When the sheep are feeding on the range, one man, with a dog (Fig. 180), can herd twenty-five hundred; and if he has a horse to

ride, he sometimes takes care of five thousand. Selecting a spot near water for a camp, the herder drives his sheep out each morning, and back at night, going each day a distance of two or three miles from camp. When the grass is eaten in one place, the camp is moved; then, from the new point as a center, they wander out as before.

The life of the herder is extremely lonely, both day and night being spent with the sheep. Once a week a man brings him food; and for weeks, and even months at a time, the only company he has, aside from his sheep, is his dog, and possibly his horse.

After the winter is over, the first income to the ranchman comes from the sale of the skins, or pelts, of sheep which of profit have died during the cold weather. He expects to lose about one sheep in twenty each year from this cause.

The next harvest comes from the wool (Fig. 181). Men who make it their business to shear sheep travel in squads of about twenty-five. They erect sheds and

bales and shipped to various markets in the East. Where should you think it might be sent, and for what purposes used?

From July on, many sheep are sold for mutton. Those that are from three to five years old, and that have already borne a quantity of wool, are usually selected for this purpose. The hides are useful for leather and the bones for fertilizing the soil.

A newly settled country has little manu-



Fig. 180. - A Montana sheep herder with his dogs and his flock.

pens near some sheep center, such as BIL-LINGS, and shear all the sheep that are brought to them. Sometimes sheep are sheared at the ranch, but many ranchmen prefer to drive them near to a market, before they are sheared. This saves the expense of hauling the wool to the railway station, and besides, the sheep graze on the way to and from the market.

In the Southwestern States sheep are often sheared twice a year; but farther north it is done only once, and then as near the month of June as possible. Can you suggest a reason for choosing that time? After the wool is cut, it is pressed into

facturing. Consequently many manufacturing in the West must still be 1. Extent of the brought from the East. As manufacturing in the Southern States, however, rapid changes have been going on, and the West is fast becoming an important manufacturing region. Already in some parts, as in Colorado and on the Pacific coast, there is a great deal of manufacturing.

There is every reason for believing that this progress will continue; for the West has great resources, including immense deposits of coal and petroleum for fuel, as well as abundant water power. Furtherthe demand for manufactured articles reasing, because many people are setin this section.



L.—Shearing sheep in Montana. The men hold the p and the wool is clipped off by machinery. There great pile of this wool along the middle of the

of the most extensive kinds of manuing in the West consists in separating the metal from the ores. After

the ore is taken the mines, it must usue crushed, the worthless must be washed out. the remainder sent to smelters (Fig. 182), the metal is extracted difficult process. nery for crushing and ing is so expensive that from many mines are to one place, and must imes be carried a long ice. For example, the near LEADVILLE send ore to that city, but mines in Colorado ship

the smelters at DENVER and PUEBLO.
the ores must be treated in some such
Thus the crushing and smelting of
an important industry in many of the

Western cities. The metals thus obtained are also manufactured into various articles in the larger cities.

The manufacture of lumber and articles made of wood, such as paper, furniture, and farm implements, is already extensive in some places, and is rapidly increasing.

As we have seen, the West is, to a large extent, a fruit and wheat region. On that account the canning and drying of fruits, and the making of flour and other products from wheat, are very important industries. The abundance of fish gives rise to the canning industry in certain places, and the great numbers of cattle and sheep supply hides and wool not only for shipment to Eastern factories, but also for manufacture in the West.

The development of manufacturing in the West has been made possible largely by the building of railroads (Fig. Transporta-183). There is a remarkably tion of goods large number of railroads here, considering the difficulty of building them and the recent settlement of the country. On Figure 280 observe that each of the great cities on the coast is connected by rail, not only with the



Fig. 182. — Mines in Butte, Montana, where copper is obtained from the ore.

others, but also with the East by one or more transcontinental railways. Count the railroads that cross the Western States, and learn their names. When the Union Pacific, the first of these, was completed, in 1869, it was thought to be a wonderful work, and of enormous importance; but now that there are so many railroads, people are inclined to overlook their great value.

Railroads are of especial value in the interior of the West, where there is very little opportunity for transportation by water. The scarcity of navigable streams is partly due to the fact that the rivers are few and shallow, and partly to the fact that many of them descend rapidly to the sea, and therefore have rapids and falls that prevent navigation. Notable exceptions are the lower Sacramento and the Columbia, on which rivers boats carry an extensive commerce.

Although harbors are not numerous, there are several excellent ones, sufficient to carry on traffic with all parts of the world. No doubt the completion of the canal which the United States is building across the Isthmus of Panama will greatly increase their importance. Why?

Large inland cities in the Western States are few in number, partly because there Leading cities are no important waterways. in the interior There are, however, so many railways that some large cities have devel-

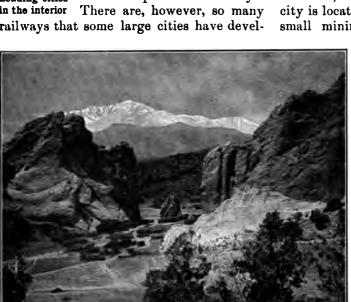


Fig. 184. - Pike's Peak from the Garden of the Gods, near Colorado Springs.



Fig. 183. — A railroad in one of the cauyons in the Rocky Mountains of Colorado.

oped, especially at the junction of important trunk lines.

The greatest of the interior cities is DENVER, the capital of Colorado. This city is located on the site of a 1. Denver and small mining camp, but its Colorado Springs

growth is chiefly due to two facts: (1) the numerous mining towns among the mountains near by; and (2) the near presence of water, which has made irrigation on a large scale possible (p. 129). The first fact calls for an important trade and manufacturing center somewhere in that region, and the second makes it possible to secure food.

Denver has now become a very important railway and manufacturing center, where ore is smelted, and machinery, flour, and cloth manufactured. It is also of importance as a health resort, for the altitude of over five

thousand feet and the dry climate are specially favorable to persons suffering from diseases of the lungs. Colorado SPRINGS, south of Denver, at the base of so that there is much manu-

ated on the Spokane River at a point where there is a large waterfall (Fig. 186). supplies abundant water power, 3. Spokane



Fig. 185. — Blast furnaces and steel works at Pueblo, Colorado.

Pike's Peak (Fig. 184), is one of the leading health resorts in the country.

PUEBLO, a trade and manufacturing center, is situated south of Denver, where the Santa Fé line meets the 2. Pueblo Denver and Rio Grande Rail-

facturing. Since the city lies in the midst of the fertile wheat region of eastern Washington, flour milling is of special importance, as at Minneapolis. From the forests of Idaho it receives lumber, and, as already mentioned, it has been greatly benefited by the rich mines of the nearby Cœur d'Alene district. Spokane is also an important railway center and distributing point for a wide area of country. It has grown very rapidly, and is now second in size among the interior cities.

Two other cities in the interior of Washington are WALLA WALLA in the southeast and NORTH YAKIMA in the Yakima Valley.

Some of the ore mined at Butte (Fig. 182) is crushed conda, and Great Some of the ore mined at and reduced in smelters Falls



Fig. 186. - The fall in Spokane River at Spokane, Washington.

way. Here much ore is smelted, and iron goods are manufactured (Fig. 185). It is the nearness to coal and iron ore which makes the latter industry possible.

within the city limits. But most of it is sent to the smelters at ANACONDA, and many of the Montana ores go to the smelters at GREAT FALLS. In the process SPOKANE, in eastern Washington, is situ- | of smelting, fumes of sulphur pour forth from the tall chimneys and settle to the | and the center of large manufacturing and ground, killing almost all vegetation, and

barren and desolate. In spite of their appearance, however, these smelting centers are thriving and rapidly growing.

Several other interior cities, such as SALT LAKE 5. Other cities CITY and OGDEN, have and towns in the interior already been mentioned (page 131). Find others on the map. Most of these owe their importance chiefly to mining, farming by irrigation, and grazing. Name the capitals of the Western States. Which of these have been mentioned, and in what connection? Locate Boise, the capital of Idaho, a city in the midst of a fertile irrigation district.

The largest city in the Western States is SAN FRANCISCO Leading cities (Fig. 187), on the coast located on a 1. San Francisco and cities remarkably near by fine harbor, (1) Names and at the tip of locations of these cities the peninsula that shuts in the waters of San Francisco Bay. This harbor, like that of New York, was formed by the sinking of There are the coast. other important cities

near San Francisco, the largest being OAK-LAND, BERKELEY, and ALAMEDA. The former, which is much the larger, is the land

ship-building industries. Close to it is causing the country round about to appear | BERKELEY (Fig. 187), the seat of the Uni-

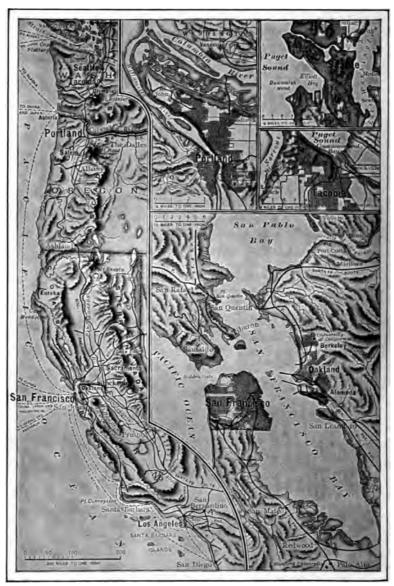


Fig. 187. - Map to show the location of San Francisco, Portland, Tacoma,

versity of California; and farther south is Stanford University. These are two of the most important universities in the West. terminus of several transcontinental railways | There are others of note, however, for each of the Western States supports a state university.

South of San Francisco is SAN José; northeast of San Francisco, on the Sacramento River, is SACRAMENTO, the capital of California; and east of San Francisco is STOCKTON, at the head of navigation on the San Joaquin River. Trace these rivers, and observe the extent of the fertile Great Valley through which they flow.

leum is still another important industry, and brewing, distilling, and the manufacture of boots, shoes, and clothing are others. San Francisco, being by far the largest of the cities in this vicinity, leads in these industries.

Not much coal is mined in California, but, since this state produces more petroleum than any other in the Union, there is an abundance of oil for fuel. Coal is easily



Frg. 188. — The Golden Gate, as the entrance to San Francisco Bay is called. Outside is the open ocean, while within is a broad, deep bay, protected from winds and waves and making a port where the largest ships may safely anchor.

The enormous crops of wheat, fruit, and wool in the Great Valley of California (2) Their suggest some of the occupations in these cities. Among them are the canning of fruit, the milling of flour, and making of wine, and also of cloth.

The mineral products in this region have led to much smelting, and to the manufacture of metal goods of various kinds. In and near San Francisco foundries and machine shops are numerous, and shipbuilding is a great industry. One of our best-known battleships, the *Oregon*, was built here.

Sugar refining is another prominent industry, the raw sugar being brought from the Hawaiian Islands. The refining of petro-

brought by train and boat from the Washington coal fields, and in the mountains there is an abundance of water power that can be used in generating electricity.

San Francisco Bay (Fig. 188) is the only gap in the Coast Ranges for hundreds of miles, either to the north or (3) Their the south; and since it is one shipping of the finest harbors in the world, it is very important as the outlet to the Great Valley and the mining regions round about it. The principal products shipped from here are gold, silver, wine, fruit, wool, grain, and the various manufactured goods just named. Some go East by rail, but many go by boat to different parts of the world. Several transcontinental railways terminate on the shores of San Francisco Bay.

all these reasons this is a great shipping point, and, as our trade increases with the Philippines, the Hawaiian Islands, Japan, China, and other countries bordering the Pacific, the amount of shipping will increase.

Many goods are sent from Stockton, Oakland, and other points on or near the bay; but San Francisco is the leading center for the shipping, as for the manufacturing.

has had such a rapid growth that it is now the second city in size in the Western States.

The first large city north of San Francisco is PORTLAND (Fig. 187) on the Willamette River, a tributary of the Columbia. Like New Orleans, it north of San is situated about a hundred Francisco miles from the ocean, near the (1) Portland head of deep-water navigation.

8. Coast cities

and vicinity

Since good harbors having connections



Fig. 189. — A street in Los Angeles bordered by palms and other warm-climate trees.

The next important harbor south of San Francisco is the port of Los Angeles, twenty miles from Los Angeles it-2. Coast cities self, where a fine artificial harouth of San Prancisco bor has been made at great Still farther south is the fine natural harbor of SAN DIEGO. Estimate the distance of these points from San Francisco (Fig. 187).

Los Angeles is one of the most beautiful cities in the country (Fig. 189). It lies in the midst of the rich orange country (Fig. 175), and there are scores of small villages, towns, and cities round about it. Among the larger of these are PASADENA, POMONA, RIVERSIDE, REDLANDS, and SAN BERNAR-DINO. Los Angeles is the chief distributing center for this productive region. It

with the interior are lacking, most of the other important towns of Oregon are inland, and Portland has grown to be the chief shipping point by water, and therefore the largest city in the state. From this point wheat, flour, fruits, wool, and lumber (Fig. 190), the leading products of Oregon, are shipped in great quantities.

Portland has extensive manufactories of woolen goods, flour, and furniture; and SALEM, the capital, situated in the fertile Willamette Valley, also has large woolen and flour mills. Farther down the Columbia is ASTORIA, where, as elsewhere along the river, the salmon industry is developed. It is also an important shipping point.

Portland, one of the most beautiful cities in the West, is growing rapidly in industry,

erce, and population, its recent growth | most remarkable. It has an extennd increasing trade with the Orient,

1. Portland is one great lumber ports world, and one of ading wheat and shipping points on cific coast.

shington, unlike n, has many fine harbors. u on ound On two of SEATTLE and **4A** (Fig. 187) are ıd. Coal, lumain, and hops are rincipal exports. is also extensive

acture of lumber, furniture, and other along the shores of Puget Sound, ally at Seattle (Fig. 191), and Ta-

These goods are shipped to the n cities, to China, Japan, the Philip-Alaska, and other countries. BEL-AM and EVERETT on Puget Sound,

is an important ship building yard at Seattle, in which the battleship Nebraska was built; the largest salmon cannery in nere is also important commerce with | the world is located at Bellingham; and



Fig. 190. — A raft of logs floating down the Willamette River to the sawmills at Portland, which is seen in the distance.

there is much other manufacturing. deed, the rapid development of manufacturing in the cities of Puget Sound has been one cause for their great growth and prosperity.

The cities of Puget Sound, especially Seattle, have the bulk of the trade with

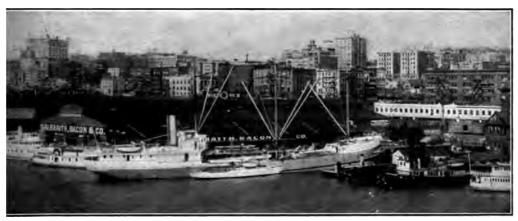


Fig. 191. - A view of a part of Seattle from the harbor.

1 smaller, have important lumber and | ndustries. There is a large smelter coma, to which ores are sent from

Alaska, as well as much commerce with the Orient, to which steamers ply regularly from Seattle. To these Puget Sound ports us distant a point as Alaska; there | most of the gold, salmon, and other Alaskan

products come, and from them the regular Alaskan steamers sail, carrying many miners and other passengers, and large cargoes of goods for use in that Northern territory. Seattle is the place of outfitting for most of the people who go to Alaska; and the rapid development of that territory has brought much business to this city, whose recent growth has been remarkable. Both Tacoma and Seattle are beautifully situated on the shores of Puget Sound, and from both the extinct volcano, Mount Rainier, is plainly visible. There are many fine public buildings in each city, and in Seattle is the

alfalfa, apples, peaches, grapes, and many-other crops are raised. While 1. Their resome of the farming is carried sources on by Mexicans and Indians, best results are gained by Americans who own a largepart of the irrigated land. The United_ States government is spending large sums of money in building storage reservoirs and in improving the irrigation systems in other ways, so that many settlers are finding valuable farm lands here. The plateaus and mountain valleys are the seats of extensive cattle and sheep

this warm climate, wheat, corn, vegetables.

ranching, and, as we have already learned, mining is of great importance. Arizona, besides being second in the production of copper, also produces large amounts of gold and silver, while New Mexico supplies much gold, silver, and coal.

The cities, though not of great size, are important distrib-2. Their cities uting centers

for the surrounding country, and also centers

for smelting the ores. Among the most important are Tucson, Prescott, Bisbee, and PHŒNIX in Arizona, and ALBUQUER-QUE, which is the largest city in New Mexico.

Among the early Spanish settlements is SANTA Fé, the capital of New Mexico. Here, as elsewhere, in the state, the houses are mostly low, one-story buildings (Fig. 192) made of sun-dried bricks, or The Spanish language is most commonly heard, and in some parts one still sees the primitive customs of a century ago. For instance, on the small Mexican farms near by, wheat, instead of being threshed out by machines, is in some cases spread upon the ground and trampled by goats until the grain is separated from the hull. The grain is then tossed into the air in order that the wind may carry away the chaff. These customs form a very striking contrast to those introduced into most parts of the region by progressive Americans, who use the



Fig. 192. — A street in a small town in New Mexico, with adobe houses belonging to the Mexican inhabitants.

University of Washington, one of the most rapidly growing and progressive state universities of the West.

Another Pacific coast port is Gray Harbor, at the mouth of Chehalis River in Washington, west of the capital OLYMPIA. Transcontinental railroads have extended their lines to it, and there is already trade in lumber and grains with the Oriental ports.

When this Western country was first settled, it was divided into territories, but as the population increased, Our newest these territories have one by one been admitted into the Union as states. The last to be admitted are Arizona and New Mexico in 1912.

There are many fertile valleys in these new states where there is irrigation; and, in most approved methods of farming and the best of farming implements.

This is the region in which some of the most civilized Indians once lived (p. 22); and here some of their descendants still occupy Indian reservations, or land reserved for them by the government. The Pueblo Indians, for instance, still live here after the manner of their ancestors. Their homes, called pueblos, are built of adobe, and in some cases are entered from the roof by means of a ladder (Fig. 37).

The pueblos were intended as strongholds for the storing of grain and for protection against

wandering tribes, which might attack them at any time. Other Indian houses, the cliff dwellings, were built on the sides of cliffs beneath over-hanging ledges; and still others, care dwellings, were in caves dug out of the rocks by the Indians (Fig. 193).

Some of the Pueblo Indians carry on farming by irrigation, as their ancestors did before the white men came; and many of them are prosperous farmers. Other Indians on reservations are more shiftless, and the government has to help them to make a living. The same is true of Indians in other parts of the West, for there are Indian reservations in all the Western States. The red men are no longer allowed to roam at will, but must live on the land allotted to them by the United States government.

In many places among the Western mountains are scenes Scenery in the that compare

favorably with those of the West Alps, which attract so many 1. The most noted places Americans abroad. Strangely formed cliffs, deep canyons, and imposing waterfalls are present without number. There are also beautiful snow-capped volcanic cones and glaciers. Many of these grand scenes may be viewed from the railway, as, for instance, the wonderful gorges and canyons through which the Denver and Rio Grande Railway winds its way across Colorado. Among all the interesting places in the West, however, are three that easily surpass the others in grandeur. These are the Yellowstone National Park, the Grand Canyon of the Colorado River, and the Yosemite Park.

The Yellowstone Park, chiefly in Wyoming, is a tract of land, larger than Connecticut, which the government has set aside as a national park.

It is often called the "Wonderland of America." A stage road leads from the Northern

Pacific Railway to the Mammoth Hot



Fig. 193. — The cave dwellings of the southwest. The Indians dug these caves out of the solid rock and lived in them.

Springs on the northern side of the park. There is also a stage route from the Oregon Short Line on the western side. At the Hot Springs from openings in the hillside, heated water flows down over beautifully colored terraces, which have been built by a deposit of mineral matter carried in solution in the hot water. Farther on are boiling springs; also boiling mud springs of different colors; and here and there is a spring, called a geyser, from which hot water and steam now and then burst forth with great violence, even to a height of one hundred or two hundred feet (Fig. 194).



Fig. 194. - "Old Faithful" geyser in eruption.

"Old Faithful," one of the most regular of these geysers, "plays" at intervals of sixty-five minutes. Then a column of steam and hot water shoots upward from one hundred to one hundred and thirty feet. Other geysers discharge at much longer periods, as two to three hours, or several days; and in some of the geysers the roar of escaping steam lasts for hours after the water has all been expelled. The outbursts are really explosions of steam, the heat being supplied from the depths of the earth. Some of the springs are on a level with the ground, so that a visitor must be on the lookout lest he step into one; others are surrounded by a rim several feet high.

Beyond the geyser basins the Yellow(2) Its lake, stone Lake is reached, a beautifulls, and canyon the mountains, nearly eight
thousand feet above the sea. Its waters

flow northward, forming the Yellowstone River, a tributary of the Missouri.

To many persons, the falls and canyon of this river are the greatest wonders of the park. Soon after leaving the lake, the stream narrows and quickens, and the water leaps one hundred and nine feet directly downward. A short distance farther on it tumbles three hundred and eight feet, or almost twice the height of Niagara (Fig. 195). The river then runs between steep walls, which rise one thousand feet above it. This canyon is somewhat winding, with numerous bold cliffs jutting far out into the abyss; and from these cliffs grand views may be obtained. Far below, one sees the silvery stream, too distant to be heard as it dashes along. Across the chasm, a half mile away, dark green pines fringe the bank, and between the water and these woods are gorgeously colored rock walls, having all the tints of the rainbow.

In this park hunting is prohibited, and for that reason wild animals are numerous and quite tame. When driving (3) Its animals through the park one can sometimes see elk by the



Fig. 195. — The great falls of the Yellowstone, three hundred and eight feet high.

roadside; and bears, both grizzly and black, come close to camps and hotels for food. There are many other animals here, among them some bison, or buffalo (Fig. 196).

One portion of the Grand Canyon of the Colorado, in Arizona, may be reached on the strike Canyon Atchison, Topeka, and Santa Fé Railway. The wonderful Yellowstone Canyon, just described, and the canyons on the Denver and Rio Grande in Colorado are pygmies compared with this.

As one first looks out into the canyon, he sees nothing but rock towers, pinnacles,

many colored layers of rock, and apparently bottomless When he finally depths. reaches a point from which the threadlike stream may be spied at the bottom of the abyss, a mile below, it seems almost impossible that so little water could have wrought such mighty havoc. Yet this river has been slowly cutting its way into the rocks for thousands of centuries, and this great gash, or canyon, is the result.

The difficult path which leads to the bottom of the canyon is seven miles long, and the trip down and back is a full day's

journey; but without making it, one fails to appreciate fully the marvelous carving, sculpturing, and coloring of the canyon walls. At the bottom the scene is entirely changed; and, as one looks upward, to see himself shut in by walls which seem to extend to the very heavens, his own littleness and the immensity of the works of Nature, are wonderfully impressed upon him.

For three hundred miles the Colorado River flows at the bottom of this deeply cut canyon, which forms a very complete barrier to travelers. A person living on one side, where he could see across to the other side, ten miles away, would need to travel hundreds of miles to reach that side; for there are no railways, roads, or paths leading across. The government has set as ile this wonderland also as a national park for the enjoyment of the people.

The remarkable Yosemite Valley, on the western slope of the Sierra Nevada Mountains, in California, presents 4. The Yosemite very different views from those Park just described. This is the region of the High Sierras, a region of deep canyons and granite peaks, one of which, Mount Whitney, 14,502 feet high, is the highest point in the United States, not including Alaska. Some of the most magnificent views in the High Sierras are formed by waterfalls of the Yosemite Creek and Merced River, in Yosemite Park. In one mighty leap the water descends fifteen hundred feet, form-

ing the Yosemite Falls (Fig. 197), which



Fig. 196. - Bison feeding in the Yellowstone National Park.

are famed the world over. Below this are some cascades, then another fall of four hundred feet.

Only a few miles from the falls are the giant trees of the world, the largest of which is 35 feet in diameter (Fig. 198) and 300 feet high. The Yosemite region, like the Yellowstone, is a public park, and is visited every year by thousands of people, including many Europeans.

It would require a great many pages to describe all the wonderful scenes in Western United States, or even to make a list of them. But mention must be made of the grand Shoshone Falls in Idaho, Lake Chelan in Washington, Lake Tahoe in the Sierra Ne-

vadas, and Crater Lake in Oregon - the great crater

L

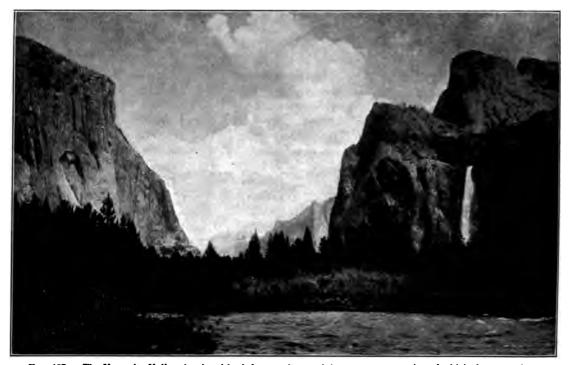


Fig. 197. — The Yosemite Valley, bordered by lofty granite precipices, over one portion of which the water leaps to form the far-famed Yosemite Falls.

of an extinct volcano in which a beautiful lake is

the slopes of Mount Rainier with its beautiful valleys, large glaciers, and grand mountain scenery.

1. Tell about the discovery of gold in California. Review 2. What Questions were the effects of this discovery? 3. Name and locate the three principal mountain systems in the West. 4. Describe the valleys between. 5. Where are volcanoes found? Of what importance is the lava? 6. What about the extent of the arid lands? 7. Where are the well-watered sections? State some facts about them. 8. What

minerals are found here, and what about the ownernow situated. Also the Rainier National Park on | ship of the mineral lands? 9. Describe the three



One of the "Big Trees" of California - so Fig. 198. large that a wagon road passes through a tunnel cut in its trunk.

methods of gold mining. 10. What can you tell about noted mining districts in Nevada? 11. In Colorado? 12. In Montana? 13. In other Western States? 14. Where are coal and petroleum found? 15. What use is made of timber in the mines? 16. Where is the timber obtained, and what are the principal kinds of trees? 17. Describe the method of lumbering in Washington. 18. What is done with the logs and with the lumber from them? 19. Of what importance are the forest reservations? 20. What kinds of fish are caught, and where? 21. What do you know about agriculare in the well-watered Northwest? 22. How is rrigation planued near Denver? 23. What about he expense of such irrigation, and its advantages? 4. What do you know about agriculture by irrigaion in Utah? 25. In southern California? ther sections? 27. How is the United States overnment assisting in irrigation in the West? 8. How is sheep ranching carried on here? 9. What are the different sources of profit in that usiness? 30. What is the extent of manufacturing a the West? 31. Name the principal kinds of nanufacturing. 82. What are the conveniences for ransportation of goods? 33. State the principal acts about Denver and vicinity. 34. Pueblo. 5. Spokane. 36. Butte, Anaconda, and Great Falls. 7. Other cities and towns in the interior. 38. Name nd locate the principal cities about San Francisco say. 89. What goods are manufactured in them? 0. What about the shipping at this point? 41. State he important facts about the coast cities south of Francisco. 42. About Portland and vicinity. 8. About the cities on Puget Sound. 44. Name ur two newest states, and tell about their reources. 45. Name and locate their principal cities. 6. What can you tell about their Indian inhabtante? 47. Name and locate the places in the West most noted for scenery. 48. Describe Yellowtone Park. 49. The Canyon of the Colorado River. io. The Yosemite Park.

Montana (Mont.). 1. What industries are caried on in the eastern part? Why? 2. In the teview Questions by States western part? 3. Name the chief cities in Montana, and tell how each is important. 4. What two large ivers drain this section? 5. Through what states to they flow before reaching the Gulf? 6. Draw n outline map of the state and, as each of the other tates is studied, do the same for that.

Wyoming (Wy.). 7. What industries are carried n in this state? 8. What cities are mentioned? n what connection? 9. Find the Yellowstone Park, nd tell for what it is noted. 10. This state is repesented as having little grain, on the maps showing the principal grain-producing regions (Figs. 249 and 251). Why?

Colorado (Col. or Colo.). 11. Examine Figures 49 to 274 to see what are the industries of Colorado.

2. Why is there more water for irrigation in this tate than in some of the others? 13. Trace the livide between the Pacific and Atlantic drainage, is it crosses Colorado. Trace it northward to Canda and southward to Mexico. 14. Name the cities in Colorado mentioned in the text, and tell how each important. 15. Find the population of Denver Appendix, p. 427). Compare it with that of other arge cities in the Western States; also with that of New Orleans and of Buffalo.

New Mexico (N.M.). 16. What about the in-

habitants? 17. What is said about the industries?
18. How large is the largest city (Appendix, p. 427)?
19. Compare it as to population with the largest city in Massachusetts; in Nevada.

Arizona (Ariz.). 20. What can you tell about the large river that crosses Arizona? 21. What cities and industries are mentioned? 22. What minerals are obtained here? 23. How does the largest city compare in size with the largest in New Mexico? In Colorado? 24. Find the population of Arizona. Of New Mexico.

Nevada (Nev.). 25. For what mines was Nevada famous? 26. Find its present population (Appendix, p. 425). Why are there so few people? 27. What about its present industries? 28. How may the government irrigation work be of special value to this state?

Utah. 29. Why is the Great Salt Lake salt? 30. What are the industries of this state? 31. What cities are mentioned? Tell about each. 32. Examine the maps, Figures 249 to 274, to see what products come from Utah.

Idaho (Ida.). 33. What metals are obtained? (See Figs. 263 to 273.) 34. What great river drains Idaho? 35. What mountain range forms the eastern boundary?

Washington (Wash.). 36. Compare the coast line with that of Oregon; of Maine. 37. What about the rainfall of this state? Compare it with that of Montana (Fig. 303). Why this difference? 38. What effect has the rainfall upon the industries? What are the principal industries? 39. What cities are mentioned in the text? What can you tell about each?

Oregon (Ore.). 40. What advantage do you see in the location of the largest city? 41. Compare it in size with Denver; New Orleans. 42. Examine the maps (Figs. 249 to 274) to see what is produced in Oregon. 43. What industries are mentioned in the text? 44. What cities are mentioned, and in what connection?

California (Cal.). 45. What about the rainfall? 46. What two rivers drain most of this state? 47. Describe the relief. 48. Name the cities mentioned; for what is each important? 49. What industries are found in this state? 50. What advantage do you see in the location of San Francisco? 51. Compare its population with that of Boston; Denver. 52. What caused the early growth of California? What effect has that had on other Western States?

53. Which state has the largest population (Appendix, p. 425)? The smallest? 54. Compare each of these two with Massachusetts and New York in population. 55. Name and locate the eight largest cities (Appendix, p. 427). 56. Which of the five groups of states has the densest population (Fig. 246)?

Which the least dense? What reasons can you give?

1. Read about the expedition of Lewis and Clark from St. Louis to the Pacific coast in 1803–1806.

Suggestions

2. Find out about the early settlement and dispute about the ownership of Oregon. 3. What is the origin of the expression "to pan out"? 4. Why do the heavier rains on the northern Pacific coast come in winter? 5. Mention several of the advantages and disadvantages of having no rain for several months at a time, as in southern California. 6. Make a collection of minerals for the school. 7. Hydraulic mining has been largely prohibited in many parts



Fig. 200. — Scene after a winter snowstorm on the Alaskan coast.

of the West. Why? 8. Should the ditch that is to irrigate a certain field skirt its upper or lower edge? Why? 9. Which is the more easily irrigated, nearly level land, or land that is rough and hilly? Why? 10. Is southern California as liable to cold snaps as Florida? Why? 11. Make a list of articles made of wool. 12. In what year were Arizona and New Mexico admitted into our Union as states? 13. Write a story describing an imaginary visit to southern California. 14. Make a drawing of the Western States, putting in the principal mountain ranges, rivers, and cities.

1. Name the principal crops of the United States, and tell in which section each is General Review raised. (Consult figures 249 to Questions for 259.) 2. Do the same for mineral products. 3. For other raw prod-

ucts. 4. For manufactured articles. 5. Name the ten largest cities in their order (Appendix, p. 426). For what is each important? 6. State some ways in which the rainfall influences the occupations of the people. 7. The temperature. 8. State clearly the influence of the sinking of the coast. 9. Of the glacial period. 10. Of the coal period. 11. Of the absence of forests on the prairies. 12. Of the rich mineral deposits in the West. 13. In what ways have the Great Lakes been of value? 14. Name some of the cities that have been benefited by them. 15. In what ways have the Mississippi River and its two largest tributaries been of value? 16. State some of the natural advantages that have aided the growth of Boston; New York; Buffalo; Philadel-

phia; Baltimore; New Orleans; Cleveland; Pittsburgh; Detroit; Chicago; St. Louis; and San Francisco. 17. Can you name some other cities that have also been influenced by their surroundings? 18. Which is the largest state (Appendix, pp. 425–426)? The second in size? The smallest? The next to the smallest? 19. Which state has the largest population (Appendix, p. 425)? The second largest? The smallest? Next to the smallest? 20. What states border Mexico? Canada? Draw a map of the United States.

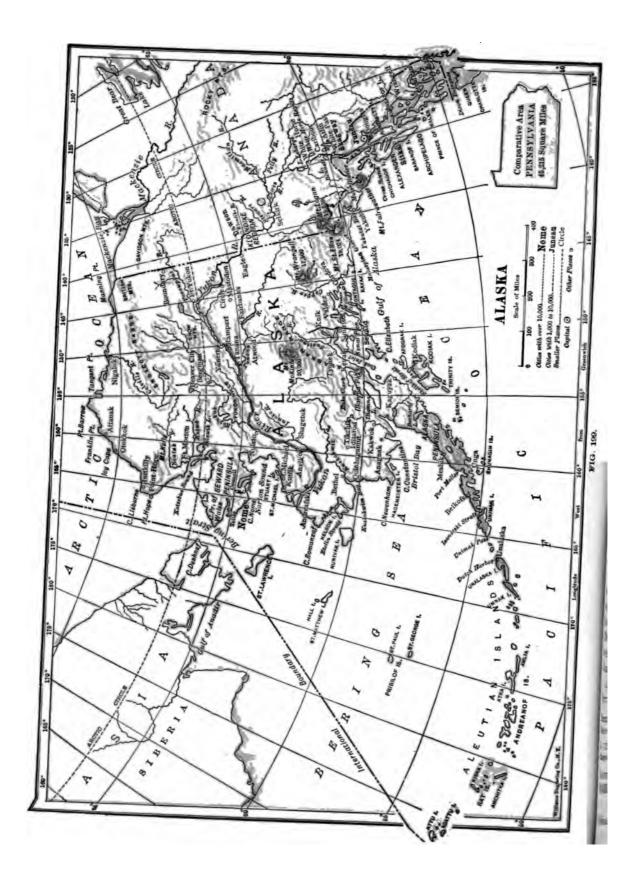
IV. TERRITORIES AND DEPENDENCIES OF THE UNITED STATES

At the close of the Revolutionary War the United States consisted of thirteen

small colonies, extending along Our increase the Atlantic coast from Maine of territory to Georgia. Our new nation laid claim also to the land far into the wilderness, even to the distant Mississippi. Beyond this was French and Spanish territory, while the whole Mississippi Valley was occupied by Indians.

By purchase, by war, and by treaty, we have gained possession of all the other land between the Atlantic and the Pacific, which has thus far been described; but our control does not end with the boundaries of the United States proper. In 1867 we ob-

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tained Alaska, and in 1898 we came into possession of a number of islands, some of them on the other side of the globe. these lands form a part of the territory controlled by our government, a study of them may come at this point.

I. Alaska

For a long time Alaska, which is more than twice as large as Texas, belonged to How obtained; Russia. In 1867 that nation sold the territory to us for and how the purchase was \$7,200,000. At the time many regarded people thought it very unwise

to pay so large a sum for so distant and desolate a land. However.

it has already proved of great value, and has paid for itself many times over.

Since the Arctic Circle crosses the northern part . of Alaska, The climate it will be seen that the climate of much of the territory must be severe. The winters are long and cold, and the summers short and cool.

A strip of coast land extends southeastward from the main peninsula of Alaska, and to this the west winds bring an abundance of rain and snow (Fig. Since these winds blow from the ocean, they make the winters much warmer than in the northern part of the territory.

A large part of Alaska is mountainous, for the mountain ranges of the United States and western Canada extend Surface of northward into this territory. the land Among these mountains are 1. Extent of the mountains the loftiest peaks of the continent, the highest yet discovered being Mount McKinley, which is 20,464 feet high.

The long peninsula and the chain of Aleutian Islands, which form the southern boundary of Bering Sea, are really a growing mountain chain 1600 miles in length. Altogether there are 57 volcances in this chain, some of them still active; and all along the Alaskan coast earthquakes are frequent, because the mountains are still rising.

The snows are so heavy that most of the mountains are snow-covered throughout the year (Fig. 201); and hun-2. The scenery dreds of glaciers descend through the mountain valleys, some even entering the sea and breaking off to form icebergs. The largest glaciers on the continent are found in this section. One of the best known of these, the Muir Glacier, is located not far north of Sitka.

There are so many islands along the coast



Fig. 201. - The snow-capped mountains near Mount Saint Elias, Alaska. In the middle of the picture is a glacier which descends to the sea, discharging icebergs from a cliff over a mile and a half long and 250 feet high.

that, for a thousand miles, the steamers sail between lofty, forest-covered mountain walls, with snow-capped peaks in the background, and upon waters whose surface is as quiet as a lake. It is one of the most wonderful ocean voyages in the world, and the reason for it is that the sinking of the land has allowed the sea to enter the branching mountain valleys, changing them to long, narrow, arms of the sea, or fords, almost cut off from the ocean.

Among the resources of Alaska, as in the case of other ing industries far Northern lands, those of 1. Fishing the sea are especially impor- (1) Catching of tant. On the shallow banks, food fak

and along the coast, are many cod and halibut, for which vessels now go from Seattle and ports further south. These fish are caught in large quantities, some being sold even in the Eastern States.



Fig. 202. — Picture of a whale, the largest of animals.

Still more important, at present, is salmon fishing. Here, as in the Columbia River (p. 127), the salmon run up the streams every summer. Sometimes the streams are almost full of these fish, all struggling to get up to the place where the eggs are laid.

It is a wonderful sight to see such a salmon "run," as it is called. Immense quantities of Alaskan salmon are canned at canneries scattered along the coast. The Alaskan steamers are loaded with canned salmon every fall, taking them to Seattle or other ports, for shipment to all parts of the world.

Another ocean animal found in Alaskan waters is the whale. This animal (Fig. 202), which is sometimes over a hundred feet long, is really

a land animal that has taken up life in the sea, as seals and walruses have done. Therefore, unlike the true fishes, which secure air from the water by means of their gills, the whale must now and then rise to the surface for air. It is when rising to breathe, or "blow," that the huge creatures are killed.

Every year steamers, specially built for the purpose, venture into the Arctic Ocean through Bering Strait in search of the whale. Few ships are now engaged in this dangerous occupation, for the whale is much less common than formerly. The ships are obliged to push their way into the flow ice, in which

they are in danger of being crushed by the pressure of the ice, as it is moved about by the current.

Men take all these risks in order to secure the valuable whalebone that grows in the whale's mouth. This bone has a coarse, hairlike fringe on its margin which serves to strain out of the water the small sea animals on which the huge monster feeds. Another product is the blubber, or layer of fat, that lies beneath the skin and keeps the whale warm even in the waters of the frozen Arctic. This blubber is made into oil; and before kerosene was made, whale oil was much used for lights.

Many different kinds of seals are found along the Alaskan coast. One of these, the *fur seal*, which lives in Bering Sea, is of great (3) Sealing value because of its soft fur, which is much used for winter coats. During the greater part of the year the fur seals swim about in



Fig. 203. — A group of fur seals on the shore of the Pribilof Islands.

search of food; but in the spring, during the breeding season, they resort to the Pribilof Islands (Fig. 203).

The United States government prohibits all persons from killing the fur seal, except one company,

which pays a special tax for the privilege of securing a certain number each year. At the proper season the men select a number of seals and drive them off for slaughter, much as sheep would be driven. There are so few of these seals, and they are so easily killed, that if the government did not protect them, all would soon be destroyed.

At present the fisheries are by far the most important of Alaskan industries.

Thus far their products have amounted in value to over \$150,000,000, nearly one half of which has been received for the salmon.

Valuable as the fisheries are, it is the minerals, especially gold, that 2. Mining have attracted most attention to Alaska. In 1896 rich gold deposits were discovered in gravels of a small stream, the Klondike, a tributary to the Yukon River in Canada. just across the Alaskan boundary. In a single year fifty thousand men rushed to this new gold field (Fig. 204), as people did to California in 1849.

Since then gold has been found in many parts of Alaska, as at NOME, in the Panana Valley, and elsewhere; and every year

them return in the fall, partly to escape the cold winter, and partly because the cold winter, and partly because the pavels cannot be washed when the ground is frozen. In some places, where the ground is frozen even in summer, it has been necessary to thaw it out by means of fires before the gravel could be washed. In 1910, Alaska ranked fourth in the production of gold in the Union, the value of the output being over \$16,000,000 (Fig. 272).

One great difficulty has been to reach the gold fields and to carry supplies to them. The early

miners were exposed to great hardships on their journey to the Klondike region. Now, however, by the help of a short railway across the mountains, one can go into the interior of Alaska much more easily. In summer many go up the Yukon River in boats; but this is impossible in winter when the river is frozen. Trace this course. How does the Yukon River compare in size with the Ohio (Appendix, p. 431)?

Partly because of the difficulty of taking in sup-



Fig. 204. — Miners fording the icy waters of an Alaskan river on the way to Klondike. Two of them are harnessed in a wagon containing their supplies.

plies and machinery, there has, as yet, been little gold mining in the solid rock. There are, however, some such mines already opened, the largest being on Douglas Island near Juneau, where there is the largest stamp mill in the world. Nor has there been much mining of other minerals, although enormous deposits of copper and coal are known to exist in Alaska.

No doubt the salmon industry will increase in importance in the future. This is true also of the mining. When, as at present, supplies have to be drawn in by dogs, or on the mining

backs of men or of horses, even across glaciers and lofty mountains, the expense of transportation is very great. However, railroads are now being built to the richest gold and copper regions; and when these are finished, the amount of metal mined will be greatly increased.

There are other valuable resources in Alaska. Among them are the extensive forests, especially along the southeastern coast, and in some of the warmer valleys of the interior.

Although the country is very mountainous, there is much good soil; and in some places the climate is suitable to farming. Besides, even where the summers are too short for crops, grass often grows luxuriantly. It is possible, therefore, to raise sheep and cattle here, and no doubt this will some day be one of the industries of Alaska.

Reindeer also thrive in this country. On the tundras in northern Asia the reindeer is a domestic animal, supplying the people with meat, milk, and hides, besides serving as a draft animal. The reindeer has already been introduced into the tundras of Alaska, and will make it possible for people to live there much more comfortably.

There is no doubt, therefore, that Alaska will prove much more valuable to us in the future than it has thus far been.

In such a new country there are, of course, no large cities. The oldest and Principal best known is the quaint town towns of SITKA, the former capital. Juneau, which was made the capital a few years ago, besides being near valuable gold mines, is on the route to the Klondike. It is, therefore, an important center. Not far north is SKAGWAY, where miners leave the steamer to take the White Pass Railway to the headwaters of the Yukon.

There are also many mining towns, such as Dawson, in the Klondike region of Canada, and Nome, on Bering Sea. In 1898, the beach sands at Nome were found to contain gold, and in a single season a good-sized city had grown on the beach. Large numbers of men lived in tents, and others in rough wooden shanties. In 1900, there were over twelve thousand people here; but ten years later, there were only about one sixth as many. In such a mining district a town may grow up in a year and become deserted in a single season.

2. Porto Rico and Cuba

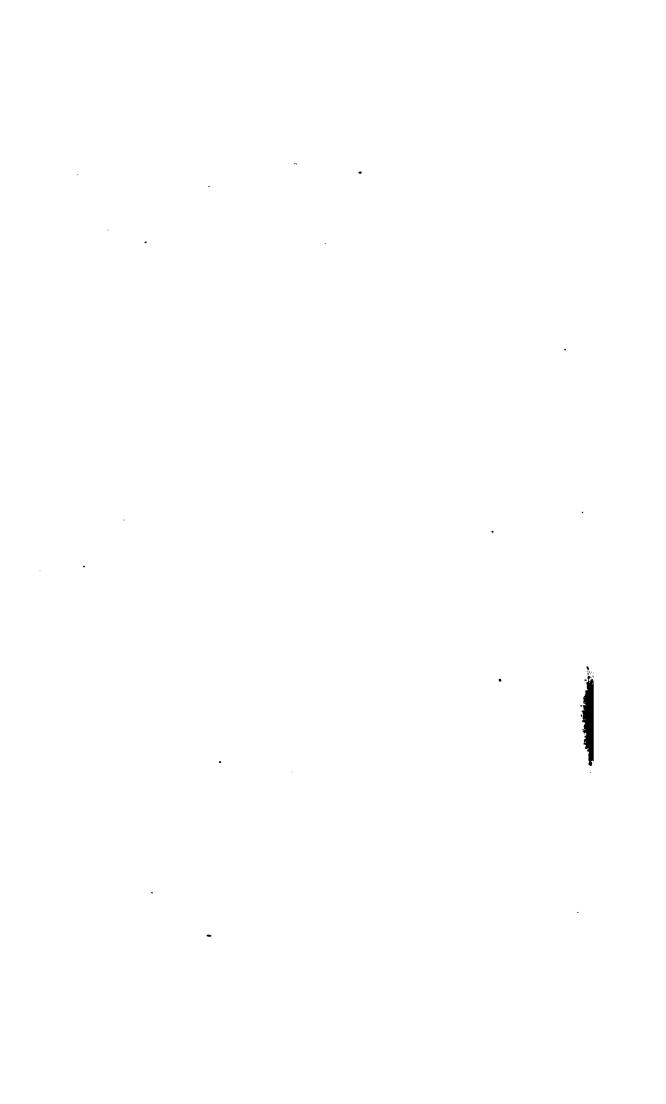
We have just seen that the United States has secured possession of distant Northern lands; it has still more recently come into control of some tropical islands. As a result of our war with Spain, in 1898, Porto Rico was ceded to the United States and Cuba was given its independence, under the general guidance of the United States.

Since that time, Porto Rico has made great advance; but Cuba has not done so After the war, our government occupied Cuba for a while, then handed over the control to the Cuban people, who established a republican form of government. But soon trouble arose, and in 1906 the United States had to interfere again. In 1909 the Cubans were again given control. Cuba is not a dependency of our country, as Porto Rico is, but the United States has a right to interfere there when it seems necessary in order to preserve peace. Since it is thus under our protection, we are more interested in Cuba than in other islands of the West Indies, with the exception of Porto Rico; and it seems better to describe Porto Rico and Cuba together than to class Cuba with the other West Indian Islands in which we have no special interest.

Cuba is the largest island in the West Indies, being nearly as large as Pennsylvania, although much longer Area and surand narrower. Porto Rico is face features somewhat smaller than Connecticut. Each of these islands is quite mountainous, the peaks in Cuba ranging from 2000 to 4000 feet above sea level, while one of them reaches an altitude of 8600 feet.

Both islands lie entirely within the tropical zone, and on the lowlands neither snow nor frost are known. On account of the warm climate many people from the United States go to Porto Rico and Cuba to spend the winter. There is an abundance of rain in most parts of the islands; but the rainfall is

FIG. 205.



especially heavy on the northeastern, or windward, slopes, where the damp winds, which blow from the northeast, first reach the land. The summer is the rainiest season, for then the winds blow with greatest strength and steadiness.

While there are mountain ranges in each of the islands, a large portion of Porto Rico and Cuba has been cleared and cultivated. This is especially true of Porto Rico, which is really an island of farms. Crops grow luxuriantly partly because of the excellent soil, and partly because of the favorable climate. Indeed, agriculture is the chief industry on both islands.

As in all the West Indies, the principal crop is sugar cane (Fig. 207), and the 1. The farm industry is carried on much as products it is in Louisiana (p. 75). A second important crop is tobacco, for which Cuba is especially noted. Tobacco is also raised extensively in Porto Rico. At HAVANA, and other places, it is manufactured into cigars, which bring high



Fig. 207. — A train on a sugar plantation in Porto Rico drawing the sugar cane to the sugar mill.

prices,—the Havana cigar being considered the best that is made.

Upon the hillslopes much coffee is produced, and some tea and cocoa. Spices, including nutmeg, cinnamon, and ginger, are products of the West Indies; also pepper, cardamom, vanilla, and pimento or

allspice. Such fruits as bananas, oranges, limes, pineapples (Fig. 208), and cocoanuts are grown in great quantities; and there



Fig. 206. - A native hut in Cuba.

are also many vegetables. There is much pasture, too, and many cattle are raised.

Our soil and climate have enabled us to raise almost all the farm products that we have needed, except such as 2. Their special may be produced within these value to the

islands. They United States can send us tea, coffee, sugar, spices, and tropical fruits. They can also send us fruits and vegetables in midwinter. Thus it is of great value to us that we have such close relations with these islands.

When first settled, the West Indies were covered by a dense tropical forest, and some of the woods still remain, especially among the higher mountains. In Cuba, for instance, there is still much valuable timber, such as mahogany, ebony, and fustic, which

produces a valuable yellow dye.

Besides the raw products of the soil, th

Besides the raw products of the soil, there is some mineral wealth in Cuba. Copper is found here, and also iron, the latter having been mined for a long time in the neighborhood of Santiago.

Railways connect some of the cities, and also reach out into the agricultural districts.

thus serving to bring the crops to the chief ports for shipment. However, many of the Conveniences towns are not connected by for transportation good wagon roads, they have almost no communication with the outside world, except by boat.

During its occupation of Cuba, the United States has had one good macadam road built from the eastern to the western end of the island. Steamboat lines now run from American ports to Havana and



Fig. 208. — Pineapples growing in Porto Rico.

other West Indian ports. Thus the United States has done much to improve the conveniences for the transportation of goods; and by that means a much better market is secured for the products of these islands.

Owing partly to lack of coal, and partly to the bad government of the Spaniards, Principal there has been very little manucities facturing. There are, however, several important cities along the coast. The largest of these is HAVANA, in Cuba, for a long time the center of the Spanish rule in America. Another Cuban city is Santiago, where the Spanish ships were sunk in the war of 1898; and a third is Matanzas.

The two principal cities of Porto Rico are San Juan, on the northern coast, and Ponce, on the southern. The former is the largest city and capital of the island.

Portions of Porto Rico and Cuba are densely populated, although in Cuba's wars

with Spain thousands upon thousands were killed in battle or starved to death. Much property was destroyed, and Inhabitants altogether the island was so of the Islands badly governed that it will be many years before a full tide of prosperity returns.

Many of the natives are of mixed blood. The Indians did not prove good slaves to their Spanish conquerors, and negro slaves were brought from Africa. Therefore, while pure-blooded Spaniards are numer-

ous, many of the inhabitants of Porto Rico and Cuba are negroes, either full blooded or half-breeds. Under Spanish rule these natives were very poor and densely ignorant; but they are capable of advance under proper guidance.

3. Panama Canal Zone (Fig. 232)

One of the most interesting regions controlled by the United States is Its location a narrow strip and impor-

of land across the Isthmus of tance
Panama, that connects North and South
America (Fig. 9). The city of Panama
is at one end, and Colon is at the other.
It is here that our government is now
engaged in digging the Panama Canal, so
that ships may pass along this route from
the Atlantic to the Pacific.

Where the canal is being dug (Fig. 209), the distance across the isthmus is only about fifty miles, and the elevation but three hundred feet at the highest point; but it will cost our government several hundred million dollars to complete the work.

The canal zone, a strip of land ten miles in width, as well as the right to build the canal, were purchased from the small Republic of Panama. Thousands of men are at work on the canal; and when finished, it will be large enough for the largest occan ships.

This is one of the greatest public works our government has ever undertaken, and it will prove of great the canal



Fig. 209. — Excavating the Panama Canal.

to the entire world. A steamer from London to San Francisco will we thousand miles by taking this new while eight thousand miles will be from New York to San Francisco. ine the globe to see why more will be in the latter case. The canal will be effit to all our seacoast towns, and will e important for shipping the products interior of our country. What effect he canal have upon the size of Panama f Colon? Why?

The Hawaiian Islands (Fig. 214)

out in the mid-Pacific, not quite a third distance from our western coast to the Philippine Islands, is a moun-untain-tain chain fifteen hundred miles racter long, most of which lies be-

neath the ocean. Several large volcanic peaks rise above the water, forming a chain of islands, known as the Sandwich, or Hawaiian, Islands. The largest of these islands is Hawaii, which is nearly as large as Connecticut. Each of the islands is made chiefly of melted rock, or lava, which has risen from within the earth (Fig. 210). Two of the Hawaiian volcanoes are still active, and the fiery hot lava flows out from them every few years. The larger, Mauna Loa, rises nearly fourteen thousand feet above the sea.

The latitude of the Hawaiian Islands (Fig. 2) is about the same as that of Cuba and Porto Rico. Being in the midst of the broad Pacific, and therefore surrounded by warm ocean water, the climate is warm and equable. From day to night, and even from summer to winter, the thermometer varies only a few

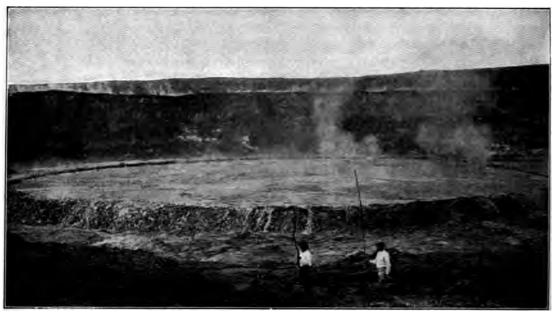


Fig. 210.—The "Lake of Fire" in the crater of one of the Hawaiian volcanoes. This is red hot lava, or melted rock, that rises from within the earth.

degrees. As in the West Indies, the northeast winds blow steadily and bring an abundance of rain to the windward slopes. The southwestern, or *leeward*, slopes are much drier, and in some places even arid.



Fig. 211. — The grass but of a native in the Hawaiian Islands

The Hawaiian natives, who are Malayans, are an intelligent race, resembling those

of other Pacific islands. The Chinese form a large part of the foreign population; but there are also many People, in-Japanese, Portuguese, and dustries, and chief cities

In 1893, the ruler, a native queen, was deposed, and the white population set up an independent government and offered the islands to the United States, as a territory. After some delay the offer was accepted,



Fig. 212. — Natives planting rice in a flooded field in the Hawaiian Islands.

and the islands have been under our control since 1898.

Many years ago white men introduced ne crops of the Old World, and the larger lands have become quite productive, the rincipal crop being sugar (Fig. 213). offee, tropical fruits, and rice (Fig. 212) re other products, the last being cultisted especially by the Chinese.

The two leading cities are Honolulu, a the island of Oahu, and Hilo, on Hawaii.

would last less than two weeks, while the voyage requires more than three weeks. Therefore the government needs to have a place along the route where it can store large quantities of coal.

Coaling stations are also wanted for passenger and freight steamers; and there is need of a place where all kinds of ships can stop for repairs. All large naval powers have such stations in various parts of the ocean. Great Britain, the greatest power upon the sea, has them in all parts of the world.



Fig. 213. — Natives cutting sugar cane on a plantation in the Hawaiian Islands.

The Hawaiian Islands were one of the rincipal sources of food for the early Califalue of the fornian miners; and great slands to the quantities of raw sugar are inited States now brought from the islands to be refined on the Pacific coast (p. 139). San Francisco has long been the chief narket place for the products of these slands.

The territory has another and still greater value. During our war with Spain the islands were used as coaling station for our war ships bound to the Philippine Islands, which then belonged to Spain. The distance from San Francisco to the Philippines s more than seven thousand miles. If we wish to end a war ship there from the Pacific coast, it is important that it find a place, on the way, at which it an obtain coal. Such a ship might carry, perhaps, ight hundred tons of coal; but as from sixty to eventy tons may be burned each day, this supply

5. Other Small Island Possessions

For a number of years the United States, Germany, and England had control over the Samoan Islands, far to the southwest of the Hawaiian Islands (Fig. 214). This arrangement did not prove satisfactory, and now Tutuila, one of the islands, is owned by the United States. It is of little value to us except for the coaling station at the harbor of Pago Pago. Apia, the chief city in the Samoan Islands, is on the island of Upola, which belongs to Germany.

As one of the results of the war with Spain, we obtained the island of Guam (Figs. 417 and 214), one of the Ladrones, or Robbers' Islands, some distance east of the Philippines. Like Tutuila, Guam is of little service to us except as a coaling station for vessels.

Our country has obtained possession of several other small islands in the Pacific. Among these are Other islands Marcus Island, northeast of Guam; Wake Island, between Guam and the Hawaiian Islands; Midway Islands, northwest of the Hawaiian Islands; and two small islands, Baker and Howland, nearly on the equator south of the Midway Islands. None of these are of special importance.

6. The Philippine Islands (Fig. 214)

During the Spanish War, Admiral Dewey destroyed the Spanish war ships in the harbor of Manila, and took possession of the Philippine Islands for the United States. At the close

Fig. 215. — A family of Filipinos, or natives of the Philippine Islands belonging to the Malay race.

of the war we paid Spain \$20,000,000 to give up all claim to them, and since then they have formed a part of our territory.

This group of islands, or archipelago, consists of more than three thousand issurface lands, many of which are very features small. The largest, Luzon, is about the size of Kentucky; and the second, Mindanao, is almost as large.

Like the West Indies and the Hawaiian Islands, the Philippines are portions of mountain ranges in the sea. This mountain chain is still growing, and

as the rocks slowly move and break, earthquake shocks are caused. Some of them have been very destructive; for instance, the earthquake of 1863 destroyed a large part of Manila. Volcances, some of which rise to a height of eight thousand to ten thousand feet, are numerous here, and some of them are very active.

While parts of the islands are mountainous, there are many valleys in which the soil is deep and fertile, being formed by the decay of lava, limestone, and other rocks rich in plant food.

Since none of the islands are very large, there can be no great rivers. Still, there are some with deep mouths, making good

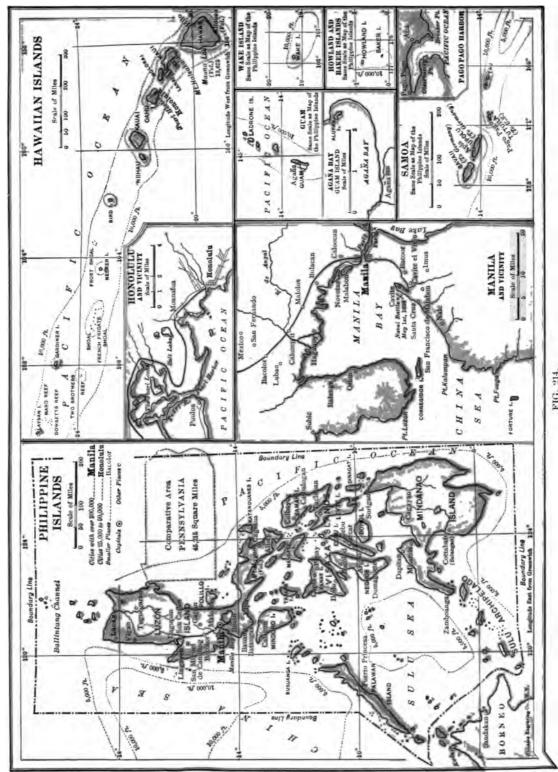
harbors; and steamboats are able to navigate the lower portions of all the larger rivers.

As in the West Indies, the climate of the Philippines is tropical—always warm, and sometimes very hot, especially at a distance from the sea.

The year is divided into the dry and rainy seasons, the former coming during the winter months, the latter in the summer. The dry period lasts as long as the winds blow from the northeast, and then the fields often become parched and cracked, and the roads very dusty. In the summer, however, the winds change to the southeast. They are then so damp that there is a deluge of rain which changes much of the country to a swamp, making travel almost impossible.

The climate, on the whole, is so damp that there can be no cellars under the houses, for they would be too wet to be healthful (Fig. 216). Indeed, the houses themselves are usually raised above the ground, and the family lives in the second story. The lower part is often used for storage, as a cellar is in our country.

Forests cover a large part of the archipelago, for trees thrive here, often forming a tropical jungle. Among the vegetation valuable woods are ebony, the and animal rubber tree, from which gutta life percha is obtained, and a palm from whose



United States' Dependencies in the Pacific.

cohol may be made. Cinnamon, cloves, epper grow in these islands, and cocoand banana trees are also very common. in other tropical forests, there are immunumbers of animals, especially insects, its, and beautiful birds. Among the its are the huge python and the deadly de capello. There are also deer, apes,

nogs, wild buffaloes, huge and man-eating croco-

inhabitants of the Philnumber over eight millions, about sixanta sevenths of whom vilized. Two very differces occupy the islands, ne aborigines, or original pitants; and (2) the ys (Fig. 215). r, a race of small, darked savages, are called tos, a Spanish word meanttle negroes. They have forced to retreat to the s by the more powerful ntelligent Malays. Bethe Negritos, the Malays, the half-breeds, many se traders and Spaniards n the islands; and now are also many Americans.

der the rule of the Spaniards, the more ed tribes cleared the land and engaged in farming. Their wants are few, however, and very little supplies them with what they need. nuts and bananas are easily obtained, ce, yams, and other food plants may be raised. There is, therefore, no special 1 for working hard; and, in fact, in varm, humid climate hard work is alimpossible. For these reasons large ers of the natives are unprogressive. ny of the people, however, are indus-, and produce more than they need for elves. Among the products for exare hemp, cocoa, coffee, sugar (Fig. 255), and tobacco, the latter being manufactured into cigars at MANILA (Fig. 217). This is almost the sole manufacturing of importance, and the inhabitants depend upon Europe and America for all but the very simplest articles.

Hemp is the best-known export of these islands. It is made from the fiber of the



Fig. 216. — A native house in the Philippine Islands built of bamboo and covered with a thatch roof. Because of the dampness the houses do not rest on the ground.

wild plantain, which so closely resembles the banana tree that most people could not tell the two apart. It is used for a number of purposes, one being for making rope. These islands supply the world with hemp for making the better grade, called Manila rope.

The castor bean grows wild, and its oil is used for many purposes. Great rafts of cocoanuts are shipped down the rivers to the sea. From this nut an oil is made that is used in lamps, and sometimes in the manufacture of a substitute for lard. Much of the dried meat of the nut, called *copra*, is shipped to Europe for use in soap making.

One of the most remarkable plants is the rattan, which the natives put to a thousand uses, such as making ropes, houses, canoes, frames, carts, beds, and

chairs. Many of the natives make a living by splitting and marketing the cane. The bamboo is also of great value. This plant grows from one inch to eighteen inches in diameter, and from five to seventy feet in height. It is used in making the frames, sides,

Fig. 217. - Native women of the Philippine Islands making cigars in Manila.

and even the roofs of houses, and also rafts, boats, agricultural implements, bows, bowstrings, arrows, spoons, forks, and many other articles.

The natives have domesticated a native wild animal, the water buffalo (Fig. 218), which is of much value as a draft animal. It is of

special service in the rice fields, which are kept flooded during the growing season. The buffalo is quite at home in the mud, even preferring wet walking to dry; and in fact, it must have a daily plunge in the mud and water.

In the entire group of islands, there are many cities having a popula-Cities tion of more than ten thousand; but there is only one of special importance. This is MANILA, on

the island of Luzon. This city, which has over two hundred thousand inhabitants, is for a long time the center of the Spanish government in the Philippines. It is still the center of government in the archipelago.

Under Spanish rule large portions of the

islands were left in a wild state; and little Probable attempt was made future to use the re- progress sources to their fullest extent. The islands are able to produce far more farm products than at present. The riches of the forests have been little used; and the minerals, including gold, silver, coal, petroleum, marble, and sulphur, have likewise been largely neglected.

There is a promising future in the development of these resources, and the civilized natives are already helping greatly in the work. Many of them are educated and cultured, living in excellent homes. They are now partly governing themselves, having

a legislature of their own; but the United States still holds control. We are helping to educate the people, and to establish a good government.



Fig. 218. — Native Filipinos plowing with the buffalo.

ALASKA: QUESTIONS. 1. How was Alaska obtained, and how was the purchase at first regarded situated upon an excellent harbor, and was | 2. Describe the climate. 3. What are the prin -



cipal surface features? 4. What can you tell about the scenery? 5. What about the food fish there? 6. State the principal facts about the whaling. 7. The sealing. 8. The mining. 9. What about the future development of the territory? 10. Name and locate the leading towns.

SUGGESTIONS. 11. Collect some whalebone. 12. How does the area of Alaska compare with that of the United States proper? 13. Measure the length of the Yukon, and compare it with the Mackenzie. 14. Draw an outline map of Alaska.

PORTO RICO AND CUBA: QUESTIONS. 15. Give some facts in their history. What is our relation to Porto Rico? To Cuba? 16. What are their areas and principal surface features? 17. Describe the climate. 18. Name the farm products. 19. How are these products of special value to the United States? 20. What other raw products are found? 21. What about the conveniences for transportation? 22. Name and locate the principal cities. 23. What about the inhabitants of the islands?

SUGGESTIONS. 21. Estimate the length and the average breadth of Cuba. 25. What products of Cuba and Porto Rico are also raised in the United States? Where? 26. State some advantage that Cuba enjoys over Louisiana in the production of sugar. 27. Make a sketch map of Cuba and Porto Rico.

PANAMA CANAL ZONE: QUESTIONS. 28. Locate this zone. 29. How was this strip of land obtained, and what is its extent? 30. What advantages will be secured by the canal?

SUGGESTIONS. 31. What difficulties are caused by the climate in the work of digging the canal? 32. Read magazine articles telling about the work.

THE HAWAHAN ISLANDS AND OTHER SMALL ISLANDS: QUESTIONS. 33. Where are the Hawaiian Islands located? 34. What are their surface features? 35. Describe their climate. 36. State the principal facts about their inhabitants, industries, and principal cities. 37. What is the special value of these islands to the United States? 38. Name and locate other island possessions. 39. How are they important?

SUGGESTIONS. 40. Why should you expect much the same products in the Hawaiian Islands as in Cuba? 41. Why is not the summer very hot in these tropical regions? 42. What city on our eastern coast should be associated with San Francisco as important for refining sugar? 43. Explain the presence of many Chinese and Japanese in these islands.

THE PHILIPPINE ISLANDS: QUESTIONS. 44. How were these islands acquired? 45. Describe their surface features. 46. Their climate. 47. What vegetable and animal life is found here? 48. State the chief facts about the inhabitants. 49. What are the principal products? 50. What about the cities?

51. Explain the possibilities for progress in these islands.

SUGGESTIONS. 52. Compare the latitude of the islands with that of the West Indies and of the Hawaiian Islands. 53. Name several other places thus far studied that have volcanoes. 54. Collect pictures of scenes in the Philippines. 55. Obtain a piece of Manila hemp rope for the school collection; also a piece of bamboo and of rattan. 56. Find out about Dewey's capture of Manila. 57. Make a sketch map of the islands.

58. Name the principal dependencies of the United States. 59. Locate each on the map of the world (Fig. 2). 60. Walk toward each. 61. Name the principal products of each. 62. In what zones does each lie? 63. How did we obtain each? 64. Name and locate the principal cities in our dependencies.

V. COUNTRIES NORTH OF THE UNITED STATES

1. Canada and Newfoundland

1. Trace the boundary line between United States and Canada. 2. Which of our states border on Canada? 3. What has caused so many lakes in the Dominion? 4. Name map Study and locate the eight largest (including the Great Lakes). 5. Name and locate the four largest rivers. Into what ocean does each drain? 6. Where are the largest cities? 7. What are the names of the largest? 8. What reasons can you see for their location? 9. Trace the Arctic Circle across Canada. 10. Compare the latitude of Labrador with that of England 11. Locate the Gulf of St. Lawrence; Hudson Bay; Greenland; Newfoundland; Nova Scotia. 12. Name the divisions of Canada.

With the exception of Alaska almost all of the land north of our country belongs to Canada.

While the British were founding the thirteen colonies, the French occupied the coast of eastern Canada and made History settlements at Quebec, Montreal, and other points along the St. Lawrence Valley. Even the result now a very large majority of the inhabitants of the Province of Quebec speak French as their mother tongue. The French and English were often at war; but finally England, aided by her colonies, won control of the French possessions north of the

United States. Only the small islands of *Miquelon* and *St. Pierre* were retained by France, and they are still used by the French as fishing stations.

After our Revolutionary War, Canada still remained in possession of Great Britain.

3. Name of the Union, and the provinces that make it

but in 1867 a union was formed called the DOMINION OF CANADA. There are nine

Fig. 220. — Lake Louise, nestled among the snow-capped mountains of western Canada, along the line of the Canadian Pacific Railway.

divisions, or provinces, in the Dominion,—Nova Scotia, Prince Edward Island, New Brunswick, Quebec, Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia. Each has a government of its own, as our states have; but the united provinces have a central government with the capital at OTTAWA, which corresponds to our capital at Washington.

Besides these provinces, there are the Yukon Territory, and several undeveloped territories. The names of the latter are given on the map (Fig. 219), but they have few inhabitants and are of little importance at present. Name these divisions.

NEWFOUNDLAND has refused to join the Dominion, so that, while still a colony of Great Britain, it is not a part 3. Newfound-of Canada. Newfoundland in-land cludes not only the island by that name, but also the east coast of Labrador.

The surface of southern Canada very closely resembles that of our Northern States. Eastern Canada, for instance, is much like New England. Surface features
That section of Canada which lies north of Ohio and New between south-

York is em Canada and more level, northern United States like those states; and it is the most important farming region in the Dominion. Farther west, north of Dakota and Montana, are broad plains (Fig. 226), increasing in elevation to the very base of the Rocky Mountains.

Among the Western mountains are many canyons, glaciers, and snow-capped peaks (Fig. 220). The scenery of this region is wonderful, and the Canadian Pacific Railway (Fig. 280) passes through the best of it. A portion of this wonderland has been set aside

as a national park by the Canadian government.

The Great Glacier (Fig. 18) covered the northeastern part of Canada, for it had its source in the highlands of Labrador. As in our country, the soil of much of Canada is glacial drift; the Great Ice Sheet also formed many lakes there, and caused great numbers of rapids and waterfalls.

The climate of southern Canada, like the surface features, corresponds to that of our Northern States, though it is slightly cooler. The climate of Nova Scotia, New Brunswick, and southern Quebec, for example, resembles that of New England, while Ontario has a climate similar to that of New York, Ohio, and Michigan. Farther west, in Manitoba, we

early the same climate as in Minnend North Dakota; and west of this, skatchewan and Alberta, come the ands. In British Columbia, on the coast, there is heavy rainfall and an emperature, as in Washington.

ord the north, however, the country grows colder, until, in the extreme northern pore climate is frigid, and there are broad exof frozen tundra.

Labrador current, which cools the tempera-New England so much (p. 33), sweeps from tic Ocean past Labrador and greatly chills st of that region, as well as Newfoundland va Scotia. There is no such ice-laden current Pacific, and for that reason the climate is mer there. Notice, for instance, how much north Vancouver and Juneau are than any pastern Canada.

forests which cover northern New nd extend into the hilly and mouning tainous section of New Brunsat of wick and southern Quebec (Fig. 221). In fact, from westward to the Pacific this wooded sweeping northward around the vast of Manitoba, is from two to three ed miles wide. This forest, which is the largest in the world, includes a million square miles, or over a of the entire area of Canada.

e east, the principal trees are spruce, balsam , and maple; in the west they are spruce, oth cedar, sometimes sixty feet in circum-, and Douglas fir, which in some cases grows to it of two hundred feet (Fig. 222). Most of st forest is a wilderness, about which very known. Wild animals still live here in umbers, and there are few parts of the conwhere the hunting for large game is so good. the animals are the deer, moose, bear, fox, ild cat, beaver, and mink. Furs are one of ncipal products of the region. From very ays the Hudson Bay Company has had tradtions in this wilderness for the purpose of ng the furs from Indians and other hunters ppers.

nbering is carried on in much the same manner as in the northing, and ern part of the United States (pp. 33 and 125). In the east

one of the rivers down which the logs are floated to the sea is the St. John. Upon this river are FREDERICTON, the capital of New Brunswick, and St. John, the largest city in that province. In these two cities the logs are made into wood pulp and lumber. Immense quantities of both these



Fig. 221. — Lumbermen chopping down a tree in the forest of eastern Canada.

products are shipped from the seaport of St. John.

The woods of Canada are at present one of its greatest sources of wealth; indeed, there are hundreds of sawmills at the rapids on the streams, and even in the large cities. Among the latter, MONTREAL, TORONTO, and OTTAWA are important, especially in the manufacture of lumber into such articles as doors, blinds, barrels, and furniture.

It was the excellent fishing on the shallow banks off the eastern coast of Canada that early attracted the French to America.



Fig. 222. — One of the large trees in the forest of western Canada. The boy sitting on the trunk gives a scale by which you can judge the size of the tree. Contrast its size with that shown in Figure 221.

and fishing is still a flourishing industry along that coast. Fully fifty thousand people in Newfoundland and Fishing the eastern provinces, espe-1. Catching of food fish cially Nova Scotia and Prince Edward Island, are engaged in cod fishing. One of the best-known fishing ports is YAR-MOUTH, in Nova Scotia, although a great deal of fishing is carried on from HALIFAX, and other smaller places in Nova Scotia. St. John's, Newfoundland, is another important fishing port.

There is also much inland fishing, for the streams and lakes still abound in trout, pickerel, whitefish, bass, and salmon (Fig. 223). Every year large numbers of men go from Canada and the United States to enjoy the sport of fishing in the Canadian

lakes and streams. In addition, there is much fishing on the west coast, especially for salmon.

It is interesting to watch the salmon as they run up the streams to spawn. At times, in order to get beyond waterfalls, they must leap several feet into the air (Fig. 223). Sometimes they fail, but, returning to the task, they try again and again until successful. When the young have reached the proper size, they go downstream to the ocean, where they live until they are ready to spawn. It is believed that they always go back to the same river in which they were born.

While traveling up the streams, the salmon are easily caught in nets set across the current, or by dip nets in the hands of fishermen, or sometimes by salmon wheels Immense numbers of salmon are canned in western Canada (Fig. 224), as in Washington and Alaska.

We have already learned (p. 150) about the seal fishing in Alaska. Seals are also found on the eastern side of Canada, but their fur is of Sealing

little value. There is, however, a layer of fat, or blubber, just beneath the skin, as in the whale. This can be made into oil, and it is mainly for the blubber that these eastern seals are caught, though the skins are also used for making leather. Vessels go out from St. John's, Newfoundland, every spring to hunt the seals in the ice that floats down in the Labrador current (Fig. 225).

What was said about the agriculture and grazing in our Northern States applies



Fig. 223.—Photograph of a salmon leaping up over a waterfall in a stream on the coast of Labrador. This fall is over ten feet high and yet the salmon are able to leap up over it.

st equally to Canada. For example, warm, damp ocean winds favor the production of wheat and the hardy fruits in British Columbia as

well as in Washfruita in est ington (p. 127). irther east, on the plains he base of the Rocky Mountains, the nching in id lands climate is too for farming. Here, thereranching is the prinindustry, as in Montana western Dakota (pp. 99 **133**). Immense herds eep and cattle are reared There are hese plains. al towns here, the largest ¿ CALGARY.

central Saskatchewan the climate beto be more favorable for agriculture, and there, as well as in Maniegion, and toba, enormous quantities of the wheat are raised. This wheat is a continuation of that found in In the midst of this wheat region is WIN-NIPEG, in which flour is manufactured, as in Minneapolis. This city is situated on the banks of the Red River of the North,



Fig. 224. — Salmon in a salmon cannery, just brought from the water.

which empties into Lake Winnipeg. Find out, from the map (Fig. 219), what other large river is tributary to this lake; also the name of its outlet.

The country north of Lake Superior is hilly and for the most part forest-covered,

being quite like north-populous farmern Minnes its products so ta and Michigan. There is, therefore, little agriculture here.

Farther east, on the peninsula between Lakes Erie, Huron, and Ontario, is some of the best farm land in Canada. This region is in the province of Ontario, which is the most populous of the Canadian provinces, containing about one third of all the

people in Canada. What large cities do you find here? More than two thirds of the inhabitants of Ontario, however, dwell either on farms or in small towns in the farming districts.



6. 225. — Seal hunters killing seal on the floe ice in the Labrador current north of Newfoundland.

rinters are long and cold, the summers varm, so that the hardy grains, esper wheat (Fig. 226), oats, and barley,



Fig. 226. — Fields of wheat, some cut, some uncut, on the level, fertile plains of southern Manitoba.

Ontario is no farther north than central and western New York; and its climate is greatly influenced by the Great Lakes. Here grapes, peaches, corn, and even tobacco are raised; also quantities of oats, wheat, barley, and flax. Some of the finest horses in America are reared in Ontario, and the province is further noted as a dairy region.

There is a strip of excellent farming country almost the entire length of the St. Lawrence River, and along a 5. Farming in part of the southern shores of Canada the Gulf of St. Lawrence. Prince Edward Island has many fine farms, and portions of Nova Scotia and New Brunswick also are farming districts. One of the best and most beautiful farming regions in all Canada is in southwestern Nova Scotia, noted especially for delicious apples. It was here that the French settlements were made, about which Longfellow has written in his "Evangeline"; and this is often called "The Land of Evangeline."

Western Canada, like western United
States, is a noted mining
region. Among the minerals,
gold and silver are especially
important, though lead and

copper ores, building stone, coal, and other mineral products are also obtained. Valuable deposits of coal are found both among the mountains and in the plains farther east. You have already learned that the famous Klondike region is situated in Yukon Territory, near the Alaskan boundary. Although so near the Arctic Circle, Dawson City, in the Klondike, has grown rapidly because of the gold mining.

Gold and silver are found in the province of Ontario, in the vicinity of the Lake of the Woods. One of the most remarkable silver deposits on the continent has recently been discovered at Cobalt, north of Toronto. Nickel is also mined in Ontario, and some oil fields have been developed.

Although iron ore has been discovered in certain places, the scarcity of coal, near at hand, has prevented Canada from producing much iron. The coal of western Canada is too distant for use in the Eastern cities, and the coal beds of the East have never been thoroughly developed. In Nova Scotia, and on Cape Breton Island, which is a part of Nova Scotia, there are extensive beds of soft coal, like that of western Pennsylvania and the Central States. This coal is

shipped to the cities of the St. Lawrence Valley. A few years ago blast furnaces were erected at Sydney, Cape Breton Island, and an important iron-manufacturing industry has arisen there. This has increased the value of the Nova Scotia coal. the other hand, ship canals have been built around the rapids and falls (Fig. 227), so that good-sized boats are able to go from the open ocean to the western part of Lake Superior, a distance of twenty-two hundred miles. This gives the Canadian route a



Fig. 227.—The Welland Canal, between Lakes Erie and Ontario. At this point there are two locks in the canal.

Point them out. Why are they needed?

There appear to be two outlets by water for central Canada,—one by way of the Transportation

way of Hudson Bay. The latter is of little use, however. Explain why.

Canada shares with the United States the advantages of navigation on all the Great Lakes, with one exception. Which is it? Fortunately for Canada, the lower St. Lawrence lies wholly within that country. But this river has some serious drawbacks. One is the ice that stops navigation in winter. A second is the presence of numerous rapids over which vessels cannot pass in going upstream. In addition, dense fogs are common in the Gulf of St. Lawrence and along the Newfoundland coast, where the damp air from the ocean is chilled in passing over the cold Labrador current (Fig. 312). On

great advantage over the Erie Canal route upon which only small canal boats can go.

There are many other large rivers in Canada besides the St. Lawrence River. Name them, and tell why most of them are of little value.

Railways have been of great importance in Canada, as in the United States. The leading railway is the Canadian Pacific, which extends from St. John, New Brunswick, entirely across Canada, to VANCOUVER, on the Pacific coast. It is the shortest route from England to China and Japan, and much freight is sent that way. Another important line is the Grand Trunk Railway.

MONTREAL (Fig. 228), the principal city in Canada, is on the St. Lawrence River (Fig. 229), at the mouth of the Ottawa River, and just below the Lachine Ottawa tivers

Rapids. Thus goods from Europe may be carried by ocean vessel to Montreal, fully a thousand miles inland; then, by transfer to other ships, they may be taken on canals, rivers, and lakes as far as Duluth. By this means, and by railways also, raw products from the North, East, South, and West collect at Montreal, either to be manufactured, or to be shipped farther. In its extensive

articles of wood, various steel and iron products, and cigars.

Farther down the river is QUEBEC, which was once the center of the French government in Canada, and the principal city. It is situated on a high bluff rising above the St. Lawrence, and is fortified so as to command that river. The better location of Montreal, farther inland, has drawn the com-

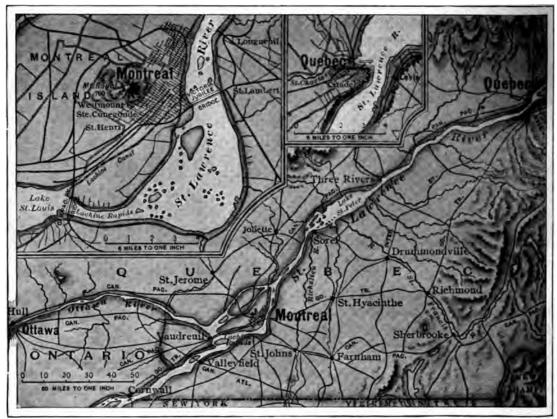


Fig. 228. — Map to show the location of Montreal, Ottawa, and Quebec.

connection with the interior of Canada, by water and by rail, Montreal reminds us of New York; but since it has a less productive territory to draw upon, it has grown far less rapidly than New York.

As in the large cities of the United States, there are many kinds of manufacturing in Montreal, including the making of sugar, boots and shoes, cotton and woolen clothing, India-rubber goods, furniture and other

merce away from Quebec. The advantage of Montreal's situation has been greatly increased by the building of ship canals around the rapids; also by the dredging of the St. Lawrence, thus deepening the channel so as to admit ocean vessels as far as the city.

Quebec is one of the quaintest and most interesting cities on the continent. It resembles a bit of the Old World, transplanted to America, and a visitor from the



b. — A view of Montreal from the hill called Mount Royal, which rises directly behind the city. In the distance is the broad St. Lawrence. Notice the long bridge crossing it.

d States feels that he is indeed in a n country. There is some manufacthere, such as the making of boots noes.

Montreal, at some large falls in the ra River. On account of this fine power, it has much manufacturing, especially noted for its lumber manries. It has beautiful government

buildings, known there as the Parliament Buildings (Fig. 230).

What Canadian cities on the Atlantic coast have already been mentioned, and in what connections? One of these, Halifax, in Nova Scotia, is one of the oldest cities in Canada. Although it has an excellent harbor, Halifax has never become a great city. The reason is easily seen on examining the map (Fig. 219). The narrow peninsula of Nova Scotia is not large enough to supply raw materials and man-



Fig. 230. — The Parliament Buildings at Ottawa.

pfactured articles in sufficient quantity to make it a great shipping point, and the country farther west is too difficult to reach. It is much cheaper to send Western goods to Montreal, for shipment eastward, than to carry them by rail as far as Halifax.

New York and Montreal show clearly the reasons why some cities flourish; and Halifax is an equally good illustration of the reason why other cities fail to grow so rapidly.

TORONTO, the second city in size in Canada, is located on an excellent harbor on the s. Along the shores of Lake Ontario. Being Great Lakes in the midst of a fertile farming country, and having water connection with coal on the east and south, and with



Fig. 231.—A Greenland Eskimo in his skin-boat, or kayak. In the distance are icebergs which have broken off from the great Greenland glacier.

lumber and other raw products on the west, Toronto has become a great manufacturing center. At the same time it is one of the most attractive cities on the continent.

Not far from Toronto, on the extreme western end of Lake Ontario, is Hamilton, a manufacturing and trade center; and there are other cities on the same peninsula, the largest being London. At the eastern end of Lake Ontario, near the Thousand Islands, is Kingston, which has cotton and woolen mills, car shops, and locomotive works, besides being a lake port and railway center. Windson (Fig. 154), opposite Detroit, shares some of the advantages of that city, being a shipping point and a manufacturing center. Port Arthur, whose location corresponds to that of Duluth in the United States, is a shipping point for grain, cattle, and other Western products.

What have you already learned about Winnipeg?

VANCOUVER, on the Pacific coast, has already been mentioned. In what connection? Across the strait on the island of Vancouver, is the city of VICTORIA. How do these two cities compare in size with the two largest on Puget Sound? (See Appendix, pp. 428 and 430.)

2. Greenland

The Eskimos (Fig. 231) living on the west coast of Greenland are under the control of the Danes, who trade with them for skins, walrus, ivory, blubber, and eider down. The most northern of the Danish trading stations is UPERNIVIK, which is the most northern point in the world where white men live. Some uncivilized Eskimos, however, have homes still farther north.

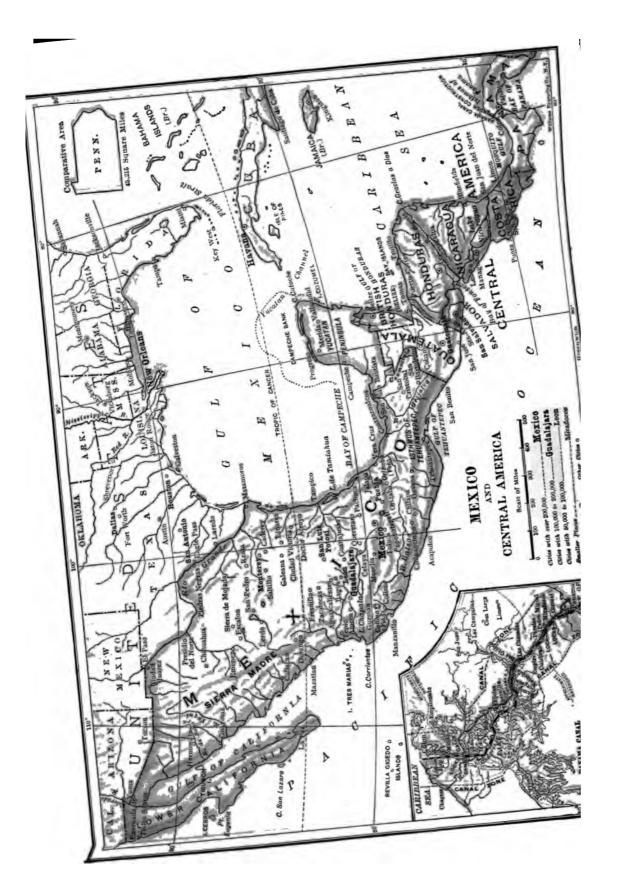
Most of Greenland is a barren waste of ice and snow—one of the most complete deserts in the world. There is no living thing to be found in the ice-covered interior. The extent of this land, and other facts about it, you have already studied in connection with the Great Glacier (p. 7).

1. What two nations struggled for possession of Canada, and what was the result?
2. How many provinces are there in Canada, and what are their names?
3. What can you tell about Newfoundland?
4. Show how fully the surface features of southern Canada correspond to those of our Northern States.
5. What have been the

effects of the Great Glacier here?

6. Describe the climate. 7. Where are the forests? 8. What is the method of lumbering, and what are the leading lumber centers? 9. Where are food fish caught? What kinds are caught? 10. What about the sealing? 11. What are the farm products in the West? 12. State the principal facts about ranching. 13. Where is the principal grain region, and what is the leading city there? 14. Where is the most populous farming section, and what are its products? 15. What about farming in southeastern Canada? 16. What can you tell about mining in British Columbia and Yukon Territory. 17. What mineral products are found in Ontario and southeastern Canada? 18. What are the conveniences for transportation? 19. Locate and tell the principal facts about the leading cities along the St. Lawrence and Ottawa rivers. 20. Along the Atlantic coast. 21. Along the Great Lakes. 22. Locate and tell about other cities of importance. 23. What is the condition in Greenland?

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1. Compare the area of Canada with that of the United States (Appendix, pp. 424 and 426). 2. ComSuggestions

a. Read the story of "Evangeline."

4. Lake Erie is how much higher than Lake Ontario? How are ships able to pass from one lake to the other? 5. Why should Buffalo grow more rapidly than Toronto? 6. Of what advantage is it to the United Kingdom to have such a large, productive colony as Canada? 7. What books on Arctic travel have you read? Tell some of the things you have learned from them. 8. Read Nansen's "First Crossing of Greenland" or Peary's "Northward over the Great Ice." 9. Recall facts that you have already learned about the Eskimo.

VI. COUNTRIES SOUTH OF THE UNITED STATES

Mexico. 1. Describe the relief of Mexico. 2. Name the two large peninsulas. 3. What river forms a part of the northern boundary? 4. What salt waters border Mexico? 5. Find the capital. 6. Find the seaport Vera Cruz. 7. Compare the coast line with that of the northeastern part of the United States.

Central America. 8. Name the countries. 9. What sea lies to the east? 10. What large lake do you find? 11. Examine the small map of the Panama Canal. Describe the route proposed. 12. Name the two cities at the two ends of the canal.

West Indies (Fig. 205). 13. Find the Bahamas; the Lesser Antilles; the Greater Antilles. 14. Name the four largest islands in the West Indies. 15. In what zone do the West Indies lie? 16. What waters touch the shores of the West Indies? 17. What nation owns the Bahamas? 18. What other nations have possessions in the West Indies? 19. Locate the Bermuda Islands on the map, Figure 9.

1. Mexico

After Columbus discovered the West Indies, the neighboring coast of the mainland was visited and settled.

Thus the Spaniards came into possession of Mexico and some of the country to the north which now belongs to the United States.

The explorers found so much gold and silver in Mexico that many Spaniards settled there. They opened mines, and started coffee plantations, farms, and cattle ranches. Many of the Spaniards inter-

married with the Indians, so that Mexico has a varied population. There are savage Indians, half-civilized Aztecs, Spanish and Indian half-breeds, and some pure-blooded Spaniards.

Spain governed Mexico so badly that the people finally rebelled, and in 1821 won their independence. They 2. The govthen established a republic ernment with a government modeled after our own. There are twenty-seven states, each with a government and capital, somewhat like our states; and there are three territories. There is also a central government, with the capital at Mexico City, where the president lives.

For a long time Texas, New Mexico, and Colorado, together with the country west of them to the Pacific, were a part of Mexico.

Texas won its independence by war, and joined our Union (p. 88); and as a result of our war with Mexico, called the Mexican War, the United States obtained all the territory which in Figure 283 is marked "Mexican Territory ceded 1848."

Mexico consists of four sections, at different heights above sea level. The lowest of these is a coastal plain, and Surface other lowlands, near the sea. features The second includes the slopes 1. The four that extend toward the high- sections at The different lands of the interior. third is the highland itself, a broad table-land, or plateau, occupying a large part of the interior of the country The fourth consists of moun-(Fig. 10). tain ranges and peaks, which are a continuation of the Cordillera of our Western Among the mountains, as in the United States, are volcanic cones (Fig. 233), two of them, Orizaba and Popocatepetl (Fig. 240), being among the highest peaks on the continent.

The divide of this narrow part of North America extends from north to south, sending some of the streams eastward, others westward. Thus all the streams of the country are short. They have a rapid fall in descending from

the interior plateau, and have cut deep canyons in its edges. In addition, the



Fig. 233. - Colima, a Mexican volcano, in eruption. This great column of steam and volcanic ash has been expelled with terrific force, rising to a height of over

streams pass through such an arid country that they have little water. Rivers of this kind are not useful for navigation.

This lack of large, navigable rivers has greatly interfered with the development of Mexico. Suggest why.

As in our Southern States, the land has been rising instead of sinking. Therefore line and harbors the coast is regular, and there are few good harbors. There are two large peninsulas projecting from the mainland. One of these is Yucatan; the other is Lower California, a southern extension of the mountains of our Western States.

Mexico has four different kinds of climate, correspondnear Vera Cruz and in Yucatan, have the hot climate of the tropical zone (Fig. 284), with abundant rain brought by the damp winds that blow across the Gulf of Mexico and the Caribbean Sea.

On the slopes west of these plains the temperature is not so hot, but there is much rain. This belt has a subtropical climate.

The interior plateau is so high that the climate is temperate, even in the part that lies south of the Tropic of Cancer; but there is so little rain that the country is arid (Fig. 299). The climate becomes steadily cooler the higher one goes. Indeed, even within the tropical zone, there are places among the mountains where the snow never melts, and where there are true glaciers. On these high mountain slopes the rainfall is quite heavy.

In the greater part of Mexico forests are rare, except upon the higher mountains. In fact, there is so little forest on Products from the arid plateau that the in- forest trees habitants find difficulty in ob- and other nataining wood for fuel. Much tive plants of this is dug from the ground; for some of the arid-land bushes, such as the mesquite, have long, thick roots which make excellent firewood. The other plants found



- A view in the tropical lowlands of Mexico near the coast, called the "hot lands." The road is bordered by banana trees. Fig. 234.

ing somewhat Climate

closely to the four areas of in the arid lands resemble those of our different altitudes. The low coastal plains, Western States (p. 16).

southern Mexico and on the damp nds, on the other hand, there are tropical forests. In these are found valuable woods, such as mahogany, rood, and logwood. The rubber tree grows here, and large quantities of rubre obtained.

e of the most valuable of the native plants is eniquen, a variety of hemp, which thrives in an. Among the exports of Mexico, this and

fibers rank next in value to al products, most of the fiber to the United States.

other product is the vanilla which grows upon a climbing

In the seed-pod are nestled agrant beans which are used aking flavoring extracts, for neries, and for medicine. Pepade from the dried berry of a al plant, is obtained in Mexico., useful as a dye, is likewise ed from a berry in this region; arsaparilla is extracted from nots of a tropical plant that here.

though the climate of a part of Mexico is arid,

agriculture is the principal industry of the people. This is partly

due to the snows and rains among the mountains, which water for irrigation. On the irrifarms the products of the temperate raised, such as wheat, corn, and the latter being one of the staple of the Mexicans. Much fruit is also d, especially apples, pears, peaches, tapes.

precies of native arid-land plant, called agave, preciet value. The stout, sharp-pointed leaves agave rise in a tuft from near the ground; in nter stands the flower stalk, which sometimes a height of forty feet, and which bears a r of white flowers on the top. This is also the century plant, because it requires so long ten to seventy years) to mature and produce ower stalk. From the juice of the agave the ans obtain an alcoholic drink known as pulque, nother known as mescal. The tough leaves of

some varieties of agave contain a fiber which is made into paper and a strong thread; and from the juices of one kind, called the *maguey*, soap may be made. So valuable is the maguey that it is carefully cultivated upon plantations (Fig. 235).

The Mexican farming methods, which are very crude, are a mixture of ancient Aztec customs and those introduced from Spain several centuries ago. One may still see the wooden plow which barely scrapes the ground; and also the woodenwheeled cart drawn by oxen. There are, however,

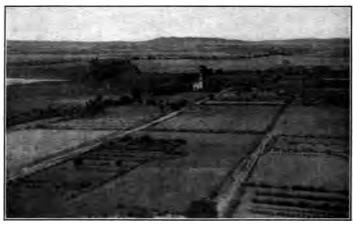


Fig. 235. — Irrigated fields on the plateau of Mexico. The rows of plants on the right are maguey.

many farmers who have adopted the same methods of farming as we have; and every year their number is increasing, for Mexico is now advancing rapidly.

The home life of the people is interesting. Their houses have but one story, and are commonly built of sun-dried bricks, or adobes (Fig. 192), held together by layers of mud. Often there is but one room (Fig. 236), the ceiling being made of brush, and the floor of nothing but earth or stones. In this one room the whole family cook, eat, and sleep. Their food consists of very simple materials, such as unraised bread, baked in the fireplace, beans, and sometimes meat, commonly cooked with red pepper. Men, women, and even children use tobacco.

While this description is true for the poorer classes, it of course does not apply to the wealthier and educated Mexicans. But even these have adobe houses, which somewhat resemble those of southern Spain.

So much of Mexico is arid that large sections are suited only to grazing. For



Fig. 236. - Interior of a Mexican adobe house.

this reason, one of the leading industries is ranching. As in our Western States, there are extensive cattle and sheep ranches; and hides, meat, and wool are important exports.

Many horses and mules are raised; but the little Mexican jackass, or burro, is one of the most common draft animals (Fig. 237). It is the size of a small pony, and is made to do all kinds of work. The burro is a very patient beast, and is able to carry heavy loads and endure much hardship.

Hogs are fattened in large numbers, and there are many goats. The latter are much prized, not only for their meat and hides, but also for their milk, which is used as a food and in making cheese.

On the damp lowlands, the farm products are quite different from those on the 2. On the lower, arid plateau. There rice, sugar humid lands cane, and cotton are produced; also tropical fruits, such as oranges, bananas, cocoanuts, and pineapples. Upon the slopes between the tropical lowlands and the temperate plateau much cotton, tobacco, and coffee are raised.

Coffee, one of the most valuable products of Mexico, requires a rich soil, abundant moisture, a warm climate, and plenty of shade. In order to secure shade, the coffee bush, which reaches a height of from ten to fifteen feet, is planted in the shade of higher trees. A white blossom appears as early as

March, and after the flower falls off, the coffee berry begins to grow (Fig. 238). It resembles a dark red cranberry. The coffee is inside of this berry in the form of two kernels, and the husk must be removed in order to prepare such kernels for market.

One of the principal objects of the Spaniards in exploring the New World Mining was to obtain gold 1. Extent of and silver; and minerals they were rewarded in their search by the discovery of rich mines both in Mexico and South America. Some of these mines had been worked by the Indians; others were found by the Spaniards them-

selves. Mexico is still a great mining country, rivalling the United States in the production of silver.



Fig. 237. - A Mexican burro carrying heavy sacks.

th gold, copper, lead, and zinc are also sed, and recently great quantities of sum have been found on the coastal as in Texas and Louisiana. A large it of iron is known to exist in several of the country. At one place, near NGO, there is an iron mountain which

ns an enormous amount of ich ore. Here blast furnaces been erected, and steel rails ther iron goods are manufac-

Find this city on the map. great obstacle to mining in Mexico ack of good coal. Another is the lack of easy transportation. ulties A third is the fact that :velopmuch of the region cannot mining easily be explored for ore. , some parts of the country are still d by tribes of savage Indians, who y prevent miners from coming in, n defy the government. Still anfficulty is the old-fashioned methods ng employed by many of the Mexi-Some of these are the same as those , the Indians centuries ago. But hods are being improved, for many leading mines are now owned by ans, Americans, or educated Mexi-Mining is now rapidly developing ico, and minerals form more than the exports. Fibers are the second importance, and coffee the third.

great deal of manuing in Mexico; and that which
is largely carried on by hand.
of this hand work is very

ful, for even the uneducated Mexicans ite artistic.

re are large tobacco factories in the o district, and smelters in the mining s. Some earthenware is also manuad, and some cotton cloth. Indeed, manufacturing is growing rapidly in mance, the cotton used being that is grown in Mexico. More money invested in cotton mills than in any form of manufacturing.

There are no large manufacturing towns such as we find in many parts of the United States; but Mexico is making rapid progress. There is much water power where the streams descend from the plateau, and this is being used for producing electricity. Railroads, too, are being built in many parts



Fig. 238.—Coffee tree and berries growing in the shade of higher trees.

of the republic. But, most important of all, those now in control are encouraging all kinds of industry and providing better facilities for education.

Wherever possible, the Mexicans have collected in cities or towns (Fig. 239). This has been necessary in many Leading cities sections in order to obtain the 1. In the water supply needed for irristrator gation. It is usually too great a task for a single farmer to build a ditch; and there-



Fig. 239. — A view of Leon, one of the cities on the plateau of Mexico. Notice how low the houses are.

Most of them are one-story adobe buildings.

fore a number combine and thus live close | together.

built on the site of an ancient Aztec Indian city. It is situated on a high plateau and There are a few large cities, the greatest being the capital, Mexico City (Fig. 240), climate. In this city, as elsewhere in Mextherefore, although so far south, has a cool



Fig. 240. — A view of a part of Mexico City, with the snow-capped cone of the volcano Popocatepeti rising in the distance.

buildings. Another city in the r of Mexico is Puebla, founded in It also is situated near one of the cities, or pueblos, of the Aztecs.

LAJARA is a third important Mexico.

Locate each of these cities.

athe eastern coast of Mexico is low andy, it has no good harbors. The

two largest cities
there are TAMnd VERA CRUZ, whose
are protected by break.
There are some good
on the western coast.
f these is ACAPULCO,
nce it is backed by
countains and a thinly
country, that port has
become of much imce.

. Central America

he six Central American ics, the smallest is Salvador; the next, if the Costa Rica. s and rern-Nicaragua, Honduras, and Guatere about equal in size. are all in North America; • Republic of Panama is in North America and in South America. It pecial interest for us. Why (p. 154)?

modeled after that of the United In addition to these countries, on stern side of the Yucatan Peninsula ish Honduras (or Belize), a colony of lited Kingdom.

six countries are independent of

ther, and each has a form of govern-

ahabitants of the Central American republics
aly Indians, Spaniards, and half-breeds. The
great majority are uneducated, and
many are even uncivilized. Largely
on account of the ignorance of the
these countries are not good examples of

republics. An ambitious general, finding a few followers, may at any time try to overturn the government. There has been rebellion after rebellion in these nations; presidents have been driven away or murdered; and the countries have quarreled with one another.

Most of Central America is mountainous, and is subject to volcanic eruptions and to earthquakes of great violence. The earthquake shocks have leveled towns and killed thousands of people. For instance,



Fig. 241. — Loading bananas on a banana plantation in Costa Rica. The bananas are then taken to the coast and placed on steamers to be shipped to the United States.

SAN SALVADOR, the capital of Salvador, was so frequently destroyed by earthquakes that the inhabitants decided to choose a new location for their city; but this is scarcely better than the old one.

Since these countries lie in the tropical zone, the climate is hot. The rainfall is heavy, especially on the eastern coast, where there are dense jungles.

A large portion of these countries is occupied by dense tropical forests, from which are obtained mahogany, rosewood, logwood, fustic, and The products other valuable cabinet and dye woods. The rubber tree also grows here, and the production of rubber is an important industry.

As in Mexico, coffee is raised on the hill slopes in the shade of the forest trees. Costa Rica is one of the most important coffee-producing districts (Fig. 242). Ba- called the Greater Antilles; and those on



Fig. 242. - Drying coffee berries in Costa Rica. There are tons of coffee berries here spread out in the sun to dry. After they are dried, the husk is removed and the bean is then shipped away.

nanas (Fig. 241), sugar, tobacco, indigo, and cocoa are other products.

Some gold and silver are obtained, the former near Bluefields, the latter in Honduras. Manufacturing is little developed.

The largest city in Central America is New GUATEMALA, the capital of Guatemala. This city, which was formerly situated at the The leading base of two very active volcanoes, city was changed to a safer site; hence the name New Guatemala.

3. The West Indies (see the Map, Fig. 205)

A chain of islands reaches from the Yucatan and Florida peninsulas to the Tocation and mouth of the Orinoco River Location and on the South American coast. names of the groups of These islands inclose the Caribislands bean Sea; and, also, with the aid of the peninsulas of Florida and Yucatan, the Gulf of Mexico. All of this archipelago, excepting the Bahamas, lies entirely within the tropical zone.

These islands, scores of which are very small, are called the West Indies, because Columbus thought he had reached India. With the exception of the Bahamas, they are also known as the Antilles. the north, including the larger ones, are

the south, the Lesser Antilles.

Two of the Greater Antilles have already been described (p. 152). The Greater What do you re- Antilles member about them?

South of Cuba lies the island of Jamaica, the third in size in the West Indies, 1. Jamaica and a possession (1) Government of Great Britain. and people The inhabitants are mainly either negroes or mulattoes, there being fully forty blacks to one white person.

This island is mountainous in the center, but has excellent soil on the lower

slopes and in the valleys, and (2) Products is very productive. The chief occupation is agriculture, and the women are employed in outdoor work as much as the men. One of the main products is sugar cane. vegetables and fruits, such as oranges and bananas (Fig. 243), are also raised. Jamaica ginger, of which every one has heard, is obtained from the root of a plant that grows in this island.

The climate and scenery are very attractive, and many people from the United States go there for s part of the winter. Regular ocean steamers carry passengers, together with great quantities of tropical fruits and vegetables.

As in other islands of the West Indies, earthquakes are common. One of these, in 1906, caused great destruction in KINGSTON, the capital and leading city.

Haiti was the first large island discovered by Columbus, and on it he made settlements and opened mines. Like 2. Haiti the other Greater Antilles, this (1) Government became an important Spanish colony; but Spain lost one island after another, the last to go being Cuba and Porto Rico (p. 152).

Fig. 243. - Bananas as they grow,

hanging in great bunches from

the broad-leafed banana tree.

Haiti has long been independent, and there

and Santo Domingo. The capital of the former is Port Au PRINCE; and of the latter. SANTO DOMINGO. They are not very progressive republics, and, as in Central America, revolutions are very common. Most of the inhabitants are negroes and half-breeds, descendants of the slaves of the Spanish settlers; but there are more white people in Santo Domingo, which is more progressive than Haiti.

Many of the natives obtain their living in the most primitive fashion,

like the negroes of (2) Products Africa; but others, especially near the seacoast, are engaged in raising sugar, tobacco, coffee, and bananas. There are valuable woods covering much of the island, and some mineral wealth; but little is done with these resources.

Most of the islands among the Lesser Antilles are posses-

sions of Great The Lesser Antilles Britain, though some belong (1) Government to other nations. For inand products stance, Martinique and Guadeloupe belong to France; St. Thomas and St. Croix to Denmark; and some to The products of the Lesser Antilles are similar to those of the other West Indies, the most important being sugar cane.

These small islands are volcanic cones. Most of the volcanoes are now extinct, but in Martinique and in St. Vincent there have been (2) Volcanoes violent volcanic outbursts. One of and earththe most terrible volcanic eruptions ouakes ever recorded occurred in Martinique in 1902. After being quiet for about fifty years, Mont Pelée (Fig. 241) suddenly burst forth and completely destroyed the beautiful city of St. Pierre, which was situated at its base (Fig. 245). In a few seconds all of the inhabitants, over twenty-five thousand people, were killed by the cloud of steam and hot ash which descended upon them.

North of Haiti and Cuba are several are now two republics in the island — Haiti | hundred small islands called the Bahamas,

> which belong to Great Britain. Α number of these are inhabited, and on one is situated the city of NAS-SAU.

These islands, like the coast of southern Florida (p. 72), have been made by coral polyps. One The Bahamas

of the products is 1. Government the sponge, which and chief city grows in the clear, 2. How the

warm waters of the islands were Bahama banks. To made; also obtain sponges, the occupations and either products inhabitants

cruise about in boats, raking them up, or they dive into the clear water, tearing them from the bottom.

On the land, early vegetables, pineapples, oranges, and cocoanuts are raised by the inhabitants, who are chiefly negroes. One of the in-

dustries, as on the neighboring coast of Florida, is



Copyrighted 1902, by William H. Rau. When this picture Fig. 244. — A view of Mont Pelée. was taken a small eruption was just beginning, and the steam and ash are seen rising from the crater.



Fig. 245. - The ruined city of St. Pierre after the terrible volcanic eruption of 1902.

caring for winter visitors. Why should people wish to go there?

4. The Bermudas (Fig. 9)

Far out in the Atlantic, six hundred miles east of the Carolinas, and alone in mid-ocean, is a cluster of islands, known as the Bermudas. The largest is only fifteen miles long and one or two miles wide. Being in the open ocean, and surrounded by warm ocean currents, these islands have a delightful and equable climate. In midwinter, when people in the same latitude in the United States are shivering with cold, those in the Bermudas are able to sit out of doors in comfort, both day and night.

This group of islands, which belongs to Great Britain, is inhabited mainly by negroes and mulattoes, who are engaged in raising early vegetables for the American market, especially potatoes and onions. Another important product is the Easter lily, great fields of which are cultivated for the Easter season. Many persons from the United States are attracted here every winter, most of whom stay in the largest city, Hamilton.

MEXICO: QUESTIONS. 1. Give some facts about the history of Mexico. 2. Explain about the four sections in Mexico that have different altitudes. 3. Tell about its rivers. 4. Its coast line and harbors. 5. Its climate. 6. What are the products from the forest trees, and other native plants? 7. What agricultural products are obtained by irrigation?

8. Describe the farming methods and the home life in the arid lands. 9. Where is ranching carried on? What animals are raised?

10. What products are obtained from the lower humid lands? 11. What about the extent of minerals in Mexico? 12. Mention several difficulties in the development of mining there. 13. What is the condition of manufacturing? 14. Name and locate the leading cities in the interior. 15. On the coast Suggestions. 16. Find out why coffee raising

SUGGESTIONS. 16. Find out why coffee raising requires special care. 17. Find an article of furniture made of mahogany. 18. Walk toward Mexico City. 19. What reasons can you give for its location? 20. Who is the president of Mexico? 21. Make a sketch map of Mexico.

CENTRAL AMERICA: QUESTIONS. 22. Name the countries here, and tell their form of government. 23. What is the character of the people. 24. Pescribe the region. 25. What are the products? 26. Name and locate the leading city.

SUGGESTIONS. 27. What disadvantages do you see in the lack of a central government for all the Central American republics? 28. In what other ways, besides saving coal, will the canal across Panama prove of advantage? Let a committee be appointed

from your class to obtain definite facts about the matter. 29. Why will harbors at each end of the canal be necessary? 30. Make a sketch map of Central America.

THE WEST INDIES AND THE BERMUDAS: QUESTIONS. 31. Locate the West Indies, and give the names of their principal groups. 32. Tell what you can about the government, people, and products of Jamaica. 33. The earthquakes there. 34. What can

yeu tell about Haiti? 35. State important facts about the Leaser Antilles. 36. About the Bahamas. 37. How are the Bermudas important? Leasts them.

SUBSECTIONS. 38. How item each of the largest four of the West Indies compare in area and population with New York State? (See tables in Appendix, pp. 424 and 426.)

Thind out more about the amption of Mont Pelée.

VII. REVIEW OF NORTH AMERICA

The natural advantages that North America
The story of possesses as our continent a home for

man have been the result of slow changes extending through millions of years.

How has our coal been formed (p. 2)? How about other minerals (p. 4)?

What great mountain systems have been produced (p. 4)? What about their

ered by the Great Glacier (p. 7)? Mention some of its important effects (pp. 9-11).

In what ways has the sinking or rising of the coast been important (p. 11)? State the present size and shape of the continent (p. 12). Show the importance of its position (p. 12).

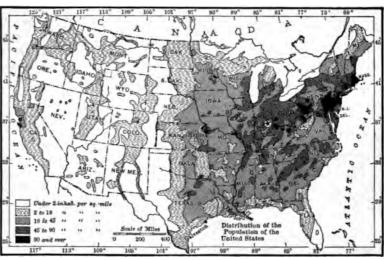


Fig. 246. - Distribution of population in the United States, 1910.

Describe the plants and animals of the Far North (p. 14). Of our arid West (p. 16). What about the plants and Its plants, anianimals in other parts of the mals, and peoten perate zone (p. 17)? Ples

About those of the torrid zone (p. 19)?

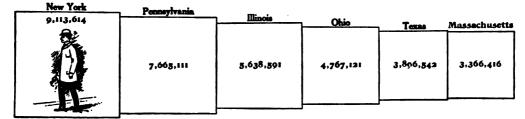


Fig. 247. — The six states with largest population (1910);

height? What are the names of the principal ranges in the Cordillera? What do you know about the formation of the Mississippi Valley (p. 5)?

What portion of the continent was cov-

Describe the manner of life of the Indians (p. 22). Why did they never become more powerful (p. 23)?

What European nations tried to obtain possession of large portions of this continent

Give some reasons why the Eng-(p. 24)? lish succeeded most fully (p. 26).

1. The United States

At present there are probably as many as a hundred and twenty-five million persons liv-



Fig. 248. - Map showing distribution of cities.

ing in North America, distributed among the four chief sections as follows: Population Central America, over five 1. Distribution of people in North America

million; and the United States (not including dependencies), more than ninety-one million (Fig. 246). From these figures it is clear that about three fourths of all the inhabitants of the continent are living in the United States.

Figure 246 shows more clearly than Figure 248 the density 2. Distribution of people in of popula-United States tion in the different parts of the Union. Where are the most thickly settled portions? The most sparsely

settled? How can you explain such distribution (p. 28)? Name in their order the six states having the greatest population (Fig. 247). Find the center of population (star in Fig. 246).

Figure 248 gives the location of the cities,

the largest having the largest dots. In the Ap- 3. Number in pendix (p. 426) is cities, and in table of the the country twenty-five largest cities. Find the dots (Fig. 248) that represent several of these. In what respect are the two figures (246) and 248) alike?

The great cities are so numerous, and have been so often mentioned, that there is danger of valuing them too highly, as compared with the country. At the time of George Washington very few people lived in Even at present about two thirds of our ninety-one

million inhabitants live either in the country, or in towns with a population of less than eight thousand. In Mexico and million; Canada, over seven | Canada the proportion living in the country million; Mexico, over fifteen | is still greater. In other words, the great

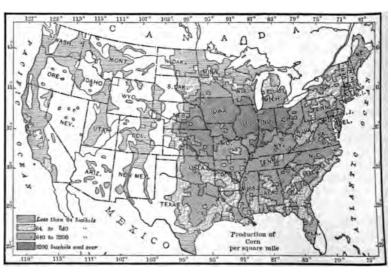


Fig. 249. - Map showing the regions of corn production in the United States.

rity of persons in North America are try people.

ere are over five million families

also extensively engaged in the wheat industry. Figure 251 shows the principal wheat regions. Where are they? What pying farms in the United States. | can you tell about wheat in the valley of

Illinois	Iowa	Missoura			
\$157,629,000	\$123,793,000		Texas	Indiana	Kansas
414,812,000 Bushels	343,870,000	\$120,516,000 273,900,000	\$114,206,000	\$80,486,000	\$76,095,000
			181,280,000	201,216,000	169,100,000

Fig. 250. — The six leading corn-producing states (1910).

it how many persons does that repre-Why should so many people live on

outside of the are agriculture, ering, fishing, and ng. The most imint of all is agricul-

gure 249 shows the ins that are most extensively ılture engaged in عمن What ing corn. s are included? In over two and a half n bushels were prod; how many bushels st for each of our inants? How is corn vated, and what are ses (p. 95)? Which

the Red River of the North (p. 96)? What are the uses of wheat? What states on the The leading occupations of persons | Pacific coast produce wheat? Name the six

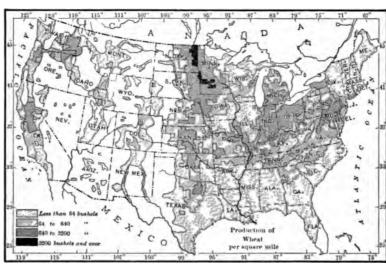


Fig. 251. - The wheat regions of the United States.

how do they rank (Fig. 250)?

my of the states that raise corn are

he six leading states in corn production, | leading wheat states in the order of their importance (Fig. 252).

Corn and wheat are our most valuable

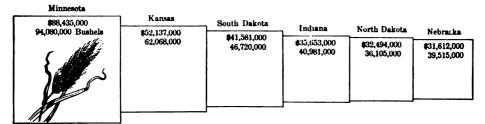


Fig. 252. — The six leading wheat-producing states (1910).

food crops. Why is so little of either raised in the western half of the United States

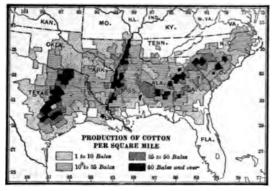


Fig. 253.— Map showing the cotton-producing states.

(p. 120)? Why so little in New England (p. 38)? What other grains do we raise, and for what is each used?

According to Figure 256 what states are largely engaged in tobacco growing? What 3. Tobacco is the appearance of the plant, and how is it prepared for use (p. 52)?

Name fruits and vegetables that are extensively raised in the United States. Figure 257 shows the sections that produce large quantities of fruit. What fruits are grown along vegetables the coast of the Middle Atlantic States (p. 53)? In Florida, Cuba, and Porto Rico?

Why is the region near the Great Lakes especially suited to fruit raising (p. 97)? What fruits are extensively grown there (p. 97)? Why is truck farming especially important in New England (p. 39)? Where are early vegetables extensively raised (pp. 53 and 77)?

Name and locate the principal irrigated sections in our Western arid lands (Fig. 258). What are their products (pp. 129-133)?

Following are three figures showing the principal states from which other important farm products come:-

How does the value of hay (Fig. 259) in New York compare with that of corn in 5. Other leading Iowa, and of wheat in Minnesota? farm products

Texas					
3,140,000 Bales of 500 lb.	Georgia	Alabama	Mississippı	South Carolina	
The same	1,750,000		}		Oklahoma
		1,174,000	1,160,000	1,116,000	900,000

Fig. 254. — The six leading cotton-producing states (1910).

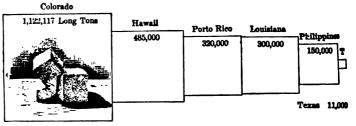
The cotton belt is confined entirely to the southeastern portion of the country, as shown in Figure 253.

2. Cotton, Name the principal sugar cane. and rice cotton-raising states and give their rank (Fig. 254). What do you know about the growth and uses of cotton (pp. 74 and 75)?

Where in these states are sugar cane and rice grown? How is each cultivated (pp. 76

rank with our dependencies in the production of sugar cane (Fig. 255)? What are the other sources of sugar?

Note that the states raising most corn (Fig. 250) correspond rather closely with those raising most hogs (Fig. 260). Why is that? Name the six lead-Why? | ing dairy states (Fig. 261).



and 77)? How does Louisiana Fig. 255.—The six leading sugar-producing sections in the United States and its dependencies. Colorado, beet sugar; others, cane sugar (1910).

Point out, on the map (Fig. 40), the portions of the country largely given up Where is beet sugar produced (p. 75)? to grazing. Why these? Relate how cattle ng is carried on (p. 99); also sheep | (Fig. 266)? Where are the leading forest ng (p. 133). Which states are most | reserves (p. 126)? Of what value are they?

important in these in-262-(Figs. What are the of ranch cattle 0)? Of sheep 4)? In which are most horses (Fig. 264)? re 265 shows the ution of the forests in the ng United Describe the ry as it is carried Maine (p. 33); Southern States); in Wisconsin 2); in the North-(p. 125). Why differences?

Fig. 256. - Map showing the tobacco-producing states.

ection (Fig. 266)? What are the sts of the forests besides lumber

In what sections is fishing especially important (Fig. 267)? What fish are caught on our Eastern coast (p. 37)? On our Pacific coast? Tell what you can about the

fishing industry in Alaska. Describe how cod fishing is carried on (p. 37); salmon fishing (p. 127); the oyster industry (p. 51).

About four hundred thousand men in our country are mployed in mining. How many different metals can you name? How many other mineral products can you mention?

Of all the minerals, the fuels are probably the most important.

Why? What kinds are there? Figure 268

ORE O 110° 100° 90° 80° 70°

MONT. PLOAR MINN.

STOAK MINN.

NED. EL OWA

NED. EL O

27. - Map showing the leading fruit-growing regions of the United States.

11 and 82)? What states produce | shows how extensive the coal beds are. eatest amount of lumber at present | Name the states in which the greatest

quantities of coal are mined (Fig. 269). Of what importance is it that there are coal



Fig. 258. — Map showing irrigation in United States.

fields in so many parts of the country? What kinds of coal are there? What are the differences between them (p. 3)?

the mineral products. Why so important? Where are the principal iron-producing regions (Fig. 268)? How is pig 2. Iron ore iron made (p. 57)? Why is not the Lake Superior district a favorable place for smelting iron ore? Name the six states that lead in production of iron ore (Fig. 270).

Describe three methods of gold mining What can you tell about gold and silver mining in Cali- 8. Precious fornia and Colorado (p. 123)? metals In what other parts of our country are the precious metals found (Fig. 271)? How does the value of the gold produced in the six leading states (Fig. 272) compare with that of the silver in the six leading states (Fig. 273)?

What states are most noted for copper mining (Fig. 271)? Describe that industry in the two leading sections (pp. 105 and 124). 4. Other min-Where and how is stone quarrying carried on in New England (p. 36)? How is salt obtained in New York (p. 54)? What other valuable mineral products can you name (pp. 57, 80, 106, 123)?

The four occupations that have been

named furnish the raw materials for our

the main, these four occupa-

New York	Pennsylvania				
\$87,009,000		Ohio	Michigan	Illinois	-
6,351,000 Tons	\$66,495,000	\$49,350,000	\$45,832,000		lowa
	.4,443,000	3,948,000	3,370,000	\$44,604,000 3,717,000	\$36,288,000
					3,780,000
STEEL LACE					1 1
				1	1
- the same of			}		
- 13 may 2 de may - 15		J			_

Fig. 259. — The six leading hay-producing states (1910).

Describe a coal mine (p. 55). What are the uses of coal?

Name the chief sections in which petroleum and natural gas are found (Fig. 271). Tell also how they have been produced | tions, as stated, lead people to of city and what

their uses are (p. 56). The ores of iron are among the

im-

of

most

portant

and what

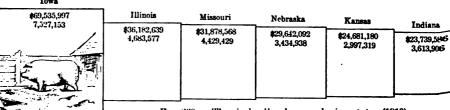
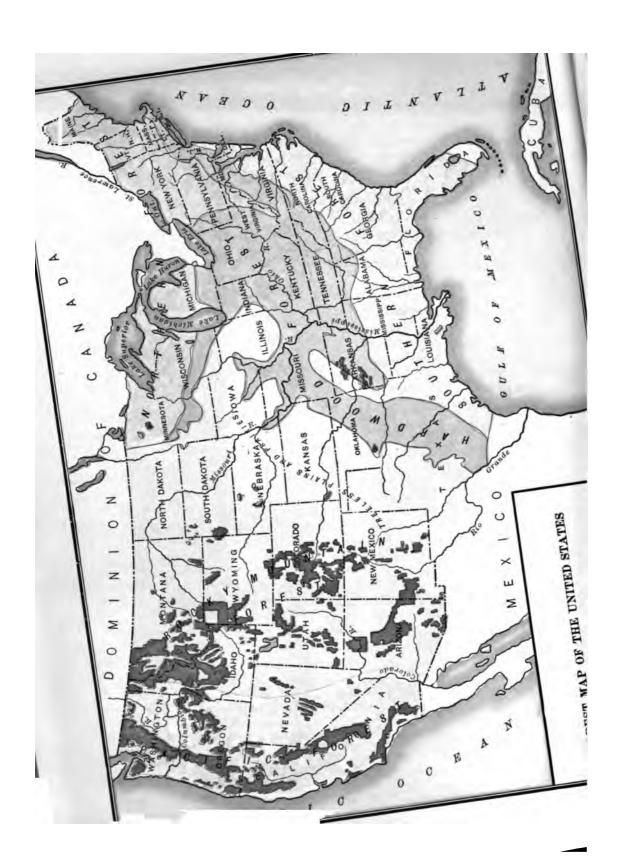


Fig. 260. — The six leading hog-producing states (1910).

food, clothing, and shelter. In

•

•



New York 783,479,286 6allons	Wisconsin	lowa	Minnesota	Pennsylvania	Illinois
A ALENA GAILOUTS	667,497,765	489,563,616	407,020,500	411,735,240	395,934,071

Fig. 261.—The six leading milk-producing states (1910). (Based on statistics giving number of dairy cows and production per cow.)

_	Texas	Iowa	New York			
1	. \$129,130,917	\$118,991,384	<u> </u>	Kansas	Nebraska	Missouri
	6,721,502	4,468,429	\$83,015,622 2,421,593	\$80,184,162 3,066,337	\$73,048,897 2,931,255	\$72,731,694 2,556,420
- 1	THE STATE OF THE S					
١	· · · · · · · · · · · · · · · · · · ·				J	

Fig. 262. — The six leading cattle-producing states (1910).

Wyoming	Montana				
\$29,648,616	\$2×,999,239	Idaho	Ohio	Oregon	New Mexico
5,391,959	5,372,639	\$15,631,797 2,950,534	\$14,932,790 3,907,055	\$12,197,477 2,696,779	\$11,905,380 3,264,012

Fig. 263. — The six leading sheep-producing states (1910).

	Iowa	Illinois				
	\$177,658,734. 1,489,225	\$163,062,351 1,450,406	Missouri	Kansas	Nebraska	Ohio
			\$113,707,841 1,070,913	\$112,543,535 1,144,870	\$102,706,582 1,006,550	\$98,853,108 910,271
ı						

Fig. 264. — The six leading horse-producing states (1910).

		ר		
4,097,492,000 Board Feet	3,733,900,000 Board Feet	2,122,205,000 Board Feet	2,084,633,000 Board Feet	1,891,291,000 Board Feet
Washington	Louisiana	Mississippi	Oregon	Wisconsin
Principal Species, Douglas Fir	Principal Species, Yellow Pine	Principal Species, Yellow Pine	Principal Species, Douglas Fir	Principal Species, Hemlock
Douglas Fir	renow rine			

Fig. 266. — The five leading lumber-producing states (1910).

live in small towns or in the country. The | Name several of the leading manufacturing three other great occupations require persons engaged in them to live for the most | each. What states lead in textile manufac-

centers there, and tell the kinds of work in

tures (Fig. 275)? Where are the cotton and wool obtained?

What kinds of manufacturing are very important in the Middle Atlantic States, aside from textile goods (p. 57)? What great advantage over New England have those states for manufacturing (p.54)? What reasons can you give why Pennsylvania leads in iron manufacturing (p. 56)? How are iron and steel made (p. 57)? Name three kinds of iron (p. 58). Name the six leading states in the production of pig iron (Fig. 276). In iron manufacturing (Fig. 277).

Tell about the manufacture of pottery in the Middle Atlant ic (p. 59) and in the Ce 1. tral (p. 107) State :; about the manufactur re of glass (p. 59); of c = ement (p. 60); of bric 368 (p. 59).

Tell about the advan ee in manufacturing in the Southern Stat-What great advantage do es Birmingham enjoy for the manufacture of iron goods (p. 82)? Name other impor rtant kinds of manufacturing in the Southe States (p. 82). What are the leading ma

ufacturing centers there, and for wh == t goods is each important?

Into what goods are corn, wheat, ar ad barley manufactured in the Central States (p. 106)? Name the great centers for the



Fig. 267. - Map showing distribution of fish.

part in cities. These are manufacturing; the transportation of goods; and buying and selling, or trading.

Figure 274 shows the principal manufacturing sections in the United States. What groups of states do they include? How Manufacturing does it happen that New England very early developed cotton manufacturing, although it raises no cotton (p. 40)? What other kinds of manufacturing are important there (p. 41)? ure of flour (p. 118). What can | the Pacific coast (pp. 188-141). Our seven bout the manufactures from forest | leading ocean ports, in the order of their im-

in the Central . 106)? For is of manufac-Chicago impor-**)9)?** St. Louis Cleveland Kansas City

uas the abunfruits in the States led to nufacturing Name some .nufacturing the Far West

Name imporrs for smelting p. 137). For nufactures is

Fig. 268. - Map showing the distribution of deposits of coal and iron in the United States.

cisco important (p. 139)? Port-140)? Seattle (p. 141)?

Ivania 4,812 Short Ton Virginia Illinois Ale **\$**56,665,061 **\$**52,405,897 61,671,019 45,900,246 \$35,932,288 34,209,668 Ohio **\$20,813,659** 18,389,815 Indiana **\$20,236,853** 16,111,462 Alabama

. - The six leading coal-producing states (1910).

turing employs more workmen in the es than any other industry, except agrilore than seven million men are

wealthiest states are shown in Note that all these states are engaged in manufacturing, as igure 274.

portance of being able to ship water is clearly shown by the fact that most of our twenty-five largest

cities (see Appendix, p. situated on a water route of some ame the leading harbors along the

portance, are New York, Boston, Philadelphia, Baltimore, New Orleans, San Francisco, Galveston. Locate each.

What can you say about the importance of the Great Lakes for shipment of goods? How are these lakes connected by water with the ocean (p. 60)? By examining Figure 279, name the principal navigable rivers in our country.

The Great Lakes carry about twice as much freight as the Mississippi system. Mention some of the principal kinds carried on each.

Where is the Erie Canal? Why has it

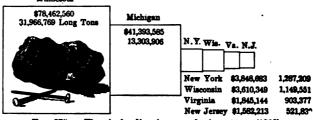


Fig. 270. -The six leading iron-producing states (1910).

been so important? Why has it become of less importance than formerly? and Gulf coasts. Name those on | else are canals found (pp. 108 and 187)?



Fig. 271. - Mineral regions of the United States.

What about the direction of a majority of the railway lines? Count the number of railways that extend east and west across the western half of the continent (Fig. 280). In what city on the Pacific coast does each of the transcontinental lines terminate?

The number of miles of railroad that each section of states has, in proportion to its area, is shown in Figure 282. The names of the principal railroads in the East are shown in Figure 281. Note how the roads come together at the great centers of manufacturing and commerce.

Figure 280 shows an enormous number of railways in the United States. They now carry fully three times as much freight as all the water routes together. In what part of the country are

Trade is the third occupation that attracts great numbers of people to Buying and cities. Every one knows that selling, or it is important to have stores trade scattered about over the country, in towns

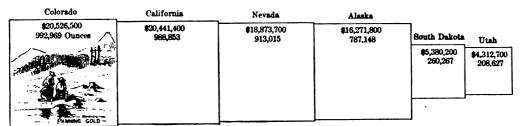


Fig. 272. — The six leading gold-producing states (1910).

most of them found? Why there? Which section is next best supplied with them? Which portion has fewest lines? How does the location of railway lines on this figure compare with the location of cities on Figure 248?

and villages, where one can purchase tarticles that he needs from day to day.

But there could not well be such storunless there were great centers of trawhere the storekeepers themselves coubuy the goods that they wished later to se

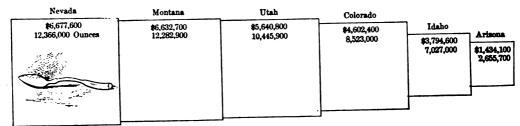


Fig. 273. — The six leading silver-producing states (1910).

is is called wholesale de, and is one of the ding occupations in great cities.

The greatest center the wholesale trade in · country is New York Describe that у. iness there (p. 63). nat goods are sold? me other great centers wholesale trade, and ne of the goods that sold. What goods extensively sold in w Orleans (p. 76)? mphis (p. 86)? Innapolis (p. 116)? nver (p. 136)?

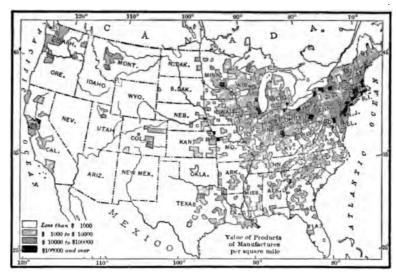


Fig. 274. - Map showing the leading manufacturing districts in the United States.

Fully four million persons in the United | agriculture, lumbering, fishing, and mining.

ites are engaged in transportation of | The remainder are mainly employed in

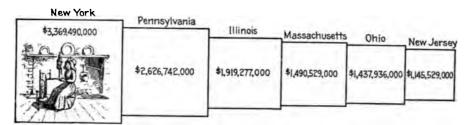


Fig. 275. - The six leading manufacturing states (1910).

> kinds of business together are called.

ds and in trade, or in commerce, as these | manufacturing these raw materials into useful articles, or in buying, sell-

ing, and transport- country and ing them. Show city upon each other by numerous examples how neither class can well do without the other.

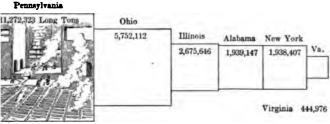


Fig. 276. — The six leading pig-iron-producing states (1910).

The relation between country and city is w clear. About one half of our men are gaged in obtaining raw materials through

Although the two classes are so dependent on each other, the life of one is very different Differences in from that of the other. manner of life Recall farm life as described on page 93. What idea have

you formed of farm life on Southern plantations? Of the ranchman's life (p. 101)? Of the miner's manner of living (p. 122)? The lumberman's (p. 34)? The fisherman's (pp. 38 and 127)? Recall, on the other hand, what was said about life in New York City (p. 64). Give your idea of

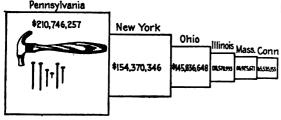


Fig. 277. — The six states leading in iron manufacturing (1910).

factory life; of life in trade and transportation. Which of these several occupations do you consider most attractive? Which least attractive?

home? How about the knives, forks dishes, and spoons? How about the clothesthat you wear?

Because of the climate, water power, soil or for some other reason, each part of the country is especially fitted for producing one or several things; for instance, eastern Kansas for grain, western Kansas for stock northern Maine for lumber, etc. Indeed most of the articles used in each part of the country must be brought from otherplaces.

Name the materials that the Montana ranchmaneeds from the Southern planter; from New England; from Minneapolis and Chicago. Upon wheat

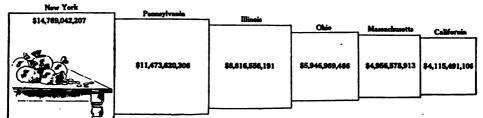


Fig. 278. - The six wealthiest states.

It is difficult to say which occupation requires the hardest work, for success demands one's best effort, no matter what the occupation may be. But which are more sure of simple food, clothing, and shelter, those living in the city or those in the

country? Why? Which are more independent in general? Why? Which have the better opportunities for amusement? Why? For education? Why? For homes with plenty of light and fresh air? Why?

For many years the population of cities has been increasing more rapidly than that of the country, which suggests that people prefer city to country life. Can you give any reasons for this, in addition to those already mentioned?

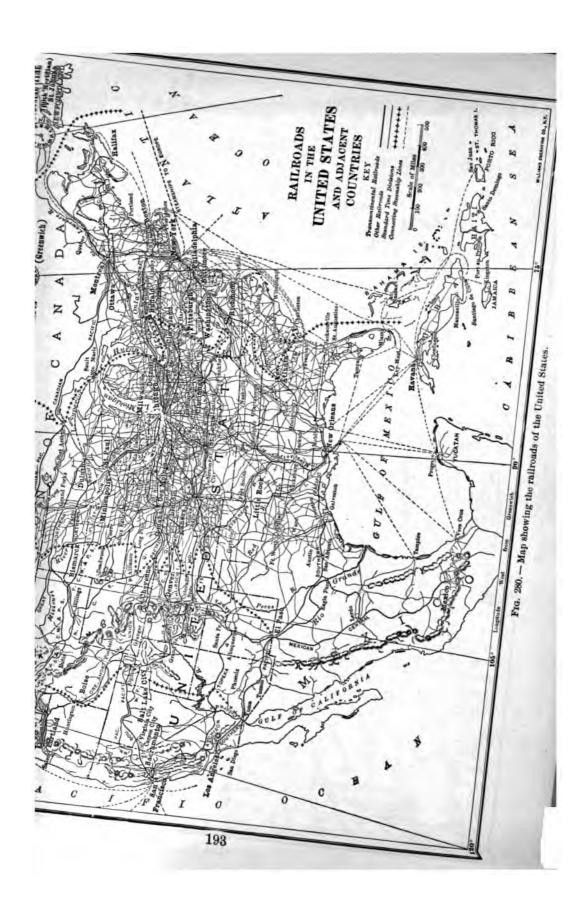
No one place produces

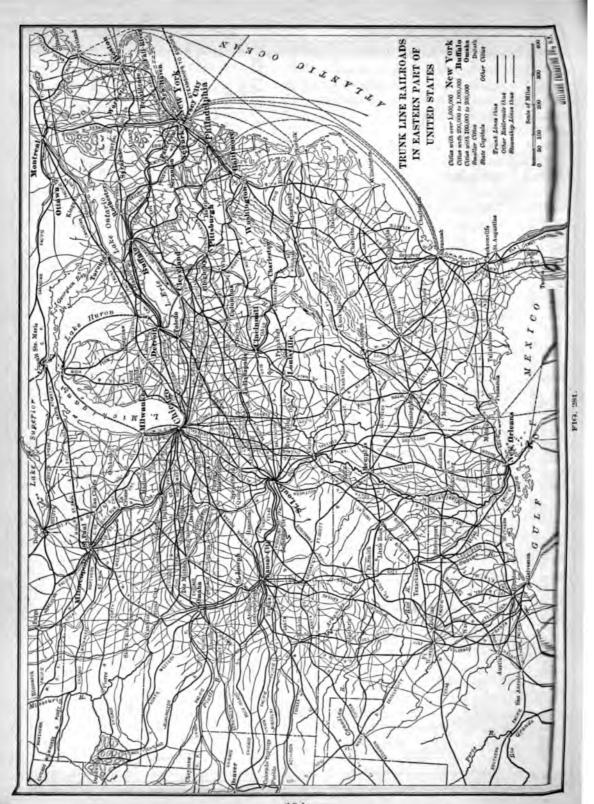
Dependence all the mateof different rials needed
sections upon there. Which
one another of your foods
are not raised near your

parts of the United States are the inhabitants of Florida dependent? What do they supply in return? Make a list of the materials used in the building of your house; and, as far as possible, determine where each one may have come from.



Fig. 279. — Map to show the navigable interior water routes of the United States





these facts it is plain that the difarts of the country are of vital imto one another, much as different the body are.

te of our broad territory, and the s number of our products, there are some necessary articles that are ind-either entirely lacking, or cannot be produced in sufficient

manufacturing in that country (p. 175). Locate the principal cities.

Name the six republics of Central America. Describe the surface of the country and the climate (p. 177). Central Name the principal industries America and (p. 178). Tell about the West Indies canal across the isthmus (p. 154).

Mention the largest islands among the

within borders. iew. (See f Imports, Mention at we are glad to rem Alaska; orto Rico; waiian Ishe Philip-

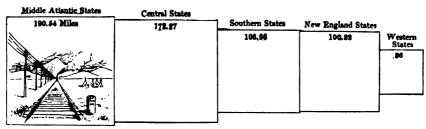


Fig. 282.— The figures represent the number of miles of railway for every one hundred square miles of territory in each of the five groups of states (1910).

Mention others that they, likewise, to receive from us. State, then, United States and its dependencies lyantage to each other.

ther Countries of North America

principal industries in southern and Newfoundland are similar to those in our Northern States. land What about agriculture there Where is coal mined (p. 166)? metal (p. 166)? What about (p. 165)? Lumbering (p. 163)? and sealing (p. 164)? Compare r products of southern Canada se of our Northern States. Name ste the principal cities; the leadde route. Mention the chief : manufacturing. (For above, see

ibe the surface of Mexico (p. 171).
nate (p. 172). What are the agricultural products from its arid plateaus (p. 173)? From its
s (p. 174)? From the slopes bep. 174)? Tell about the forests of (p. 172); the mining (p. 175).
me reasons why there is so little

West Indies. What are their chief industries (p. 178)?

3. Relation of United States to Other Countries

What industries in the United States are not found, or are little developed, in Canada? In Mexico? In Central America? What industries in any one of the latter countries are not found in the United States?

Need of our sending away some goods and receiving others

As in the case of any single locality, the United States as a whole produces far more of some materials than our people can consume. Other important articles must come wholly, or in part, from abroad. Give examples of each.

If we could not secure a market for our products in foreign lands, we should suffer greatly; and if foreign countries did not provide us with what we need, we should suffer again. Other countries are in the same condition. Show how that is true of Canada; of Mexico. There is excellent reason, therefore, for a constant exchange of goods among the nations of the world.

How does the size of our country give us a great advantage in this respect?

The goods that we send forth are called exports, and those brought in, imports. ExThe names of such goods, and imports on pp. 410 and 411 to see some things that we send away and receive, as well as the countries with which we trade.

More than half of all our exports and imports are sent by way of New York. Why? Other ports next in importance have already been named (p. 189). What are their names? The total value of our exports in 1911 was \$1,536,561,442; of our imports, \$824,620,160.

Some imports are allowed to enter the country free; but upon most of them there is a duty; that is, a charge for entering our country. This duty is a source of income, or revenue, for the government. It is also intended to protect our industries by preventing foreign products from being sold in our country at a lower rate than we can produce them.

However, this sometimes causes hardship. For example, a citizen of the United States, living near the border of Canada, cannot buy lumber and wood pulp from that country without paying a duty upon them. This causes us to pay a higher price for many articles than we would have to pay if no duty were placed upon them. Under such conditions the boundary line between two neighboring countries becomes of real importance as a hindrance to free trade.

4. Value of Steam and Electricity in Development of North America

The use of steam upon the water ways and railways has been of the greatest inAdvances fluence in the development made in a of our country. A century century ago it required two days to travel from New York to Philadelphia, and six days from New York to Boston. In the latter case only two trips per week were made by stage. The journeys were not only very tiresome, but were often dangerous.

At that time there were but thirteen daily papers in the United States, and neither papers nor books could be sent by mail. Letters cost from six to twenty-five

cents, according to the distance; and because the expense of carrying them was great, they were not sent from the smaller towns until a sufficient number were collected to make it worth while.

Now we can travel as far in an hour as our forefathers could in a day, and with much more comfort. There are over two thousand daily papers, and these, as well as letters, may be sent quickly and cheaply to every section of the country. We can send a telegram to a distant point in an instant, and can talk by telephone with a person hundreds of miles away, even recognizing the tones of his voice. How wonderful these facts would have been to persons living a hundred years ago!

The effect of such a mighty change is seen in every direction. Each year thousands of car loads of fruit are shipped to Eastern cities from California. If there were no railways, how could such fruits reach these cities? What, then, would be the effect on southern California?

Also, how could the corn of the Central States be marketed? And how could furniture, sugar, and coffee be brought to the Western farmer's door? Trace other results of this change.

If our railway trains and steamboats should all suddenly stop running, there would be a famine in every large city within a few days. Even now, when heavy falls of snow block the trains for a day or two, the supply of milk, meat, and other foods quickly runs low, and the prices rise to several times their usual value.

If we had no railway trains, there might also be extensive famines over large areas of country, as there were in Europe in the olden times, and as there are even at present in China. Why in China! As it is, however, hundreds of articles of food and clothing are quickly brought from distant points. Mention several such articles. No one section is in danger of suffering from want of food, because if the supply fails there, it is easily obtained from other sections.

The effect of steam and electricity on the industries and inhabitants of cities is striking. Many persons living scores of miles away do much of their shopping in the cities. Owing to trolley lines, elevated railways, and other means of rapid travel, those engaged in manufacture or commerce are able to live many miles from their places of work, and thus secure more healthful homes in the suburbs. Because so many people are able

sir homes in the suburbs, the cities are so overcrowded as they might other-

our Union was formed, more than ago, many wise persons believed that it was bound to be a failure. Our population was so scattered (Fig. 43) that people one part were likely to know and

about those in ant parts. It probable that and wars would to differences and therefore republic might to several rival

e opposite has
Our people
y united in inid are working
other. At the
our boundaries
i so enlarged as
e far more terin was at first
possible (Fig.

sent to all parts of the country. In all the states the people read the same news every morning; and whatever books are found especially valuable in one section quickly become known in others. Thus we not only enjoy far better opportunities for education than formerly, but we learn to know one another; we have the same thoughts, and we feel a common sym-



Fig. 283. - Map to show when and how the United States obtained its territory.

from that, millions of foreigners tled in our country since 1821, ing all the principal races of manp., p. 432), and many of the leadages, religions, and political beliefs orld. In spite of all this, we have such close touch with one another Union has grown stronger and

ay, by rail and water, articles are

pathy. So far as meeting and understanding one another are concerned, our country is really far smaller than it was a hundred years ago; we are living together like one very large family.

The governments of Canada and Mexico are unions of many states, much like our Union; and the benefits that they have received from steam and electricity have been similar to our own.

PART II. GENERAL GEOGRAPHY

I. THE EARTH

THE earth is a sphere with a circumference of about twenty-five thousand miles, Form and size and a diameter of nearly eight of the earth thousand miles. It is slightly flattened at the poles, however. For this reason, the line which extends through the center of the earth from pole to pole—called the earth's axis—is a little shorter than the diameter at the equator.

The earth is known to be round like a ball, not only because people have traveled Proofs that around it, but also because its it is round shadow, as seen in an eclipse, is always round. A sphere is the only body that will always cast a round shadow. Can you give another proof that the earth has the form of a sphere?

The earth is rapidly turning, or rotating, This motion has very imabout its axis. portant results. In the first Its daily motion, and the place it causes sunrise and results sunset. When we glance out of the window of a moving car, the objects that we pass often appear to be moving in the direction opposite from that in which we are traveling. It seems as though we were standing still. In a similar way the rotation of the earth causes the sun to appear to move; to appear to rise and set. Indeed, for a long time people believed that it was the sun that moved, and not the earth.

Since we first see the sun in the east, it is plain that the earth is rotating eastward; that is, from west to east. This rotation gives us the light of the sun for a few hours, and then brings darkness. Thus it

causes day and night. And since one rotation lasts twenty-four hours, it gives us a day of that length.

It was stated before that the circumference of the earth is about twenty-five thousand miles. Howfar, then, must a point on the equator move in one hour? In one minute?

By rotating a globe, or an apple, in the sunlight, show how day and night are caused on the earth. Hold the sphere still; what would be true about daylight and darkness on the earth if it did not rotate at all? What might be the effect upon life on the earth if the same side were always toward the sun?

The earth has another motion that is of very great importance. This is its revolution around the sun, which is The yearly illustrated in Figure 284. The motion of the object shown in the center of earth the circle is the sun, as you see, and the circle itself shows the course that the earth takes in its revolution.

At the same time that the earth is whirling on its axis, it is also forever swinging around the sun, although the sun is ninety-three million miles from it. It takes a year to complete one revolution. Indeed, the time necessary for this great journey is what fixes the length of our year. The path, or *orbit*, that the earth takes is here represented as a circle, although, in fact, the earth's path is not a perfect circle.

In its revolution, the earth is moving at the rate of more than one and a half million What fearful speed! And this, too, while it is whirling, or rotating, on its axis! One might ask, "With such rapid motion, why are we not swept from the earth by the wind?"

The answer is that the air, as well as everything also upon the earth is decreased.

as everything else upon the earth, is drawn toward the earth and held in place by the force called gree-

ity. It is on account of this force that everything on the earth turns with it, in the daily rotation, and swings around with it in its annual revolution.

Again, if the earth is revolving at such speed, why does it not fly away into space? As a stone swinging round at the end of a string flies off when the string

breaks, so it might seem that

the earth would fly off into night that lasts week space; for there appears to be after week. It is upon nothing holding it to the sun. this date, also, that our As a matter of fact, there is winter begins. comething holding it. It is not a string, After Denor a rope, to cember 21. be sure, but the Arctic something far The region gradstronger. sun is very much ually comes larger than the into the light earth; in fact, once more. it is over until, on million March times as large. Ιt 21, the attracts sun's the earth, light again and holds it in extends place, in much from pole to the same way as the force of gravpole. Day ity attracts men and night and houses to the are once earth. This atmore equal everytraction of gravitawhere upon the earth, tion, which the sun exerts upon the earth, is what preand warmer weather vents our sphere from flying returns. That date off into space; it holds the marks the beginning earth as firmly as the string holds the stone.

-To illustrate the revolution of the earth

around the sun. The shaded portion represents night. The revolution of the The end of the axis around which the earth rotates is the point where the lines come together. Effects of the earth is what earth's revo- causes our seasons and the changing length of our day and night.

Fig. 284.

In Figure 284 the lowest sphere, bearing the date September 23, represents the earth as receiving the light of the sun from pole to pole. On that date day and night are equal everywhere upon the earth. marks the end of summer and the beginning of our autumn.

Following the earth in its revolution (to the right), we find that, as the months pass, the north pole falls farther and farther into Farther north the nights are longer still,1 and the Eskimos, who live within the Arctic Circle, are having

the shadow, until the farthest point is

for our shortest day and longest night.

reached on December 21.

That is the date

of our spring.

Going farther, on June 21, the north pole is shown to be just as

far within the light as it was within the shadow on December 21. This is the date for our longest day and shortest night. Farther north, the days are longer still, and within the Arctic Circle the day lasts week after week. It is upon this day, also, that our summer begins.2

¹ Exactly at the north pole there are six months of day and then six months of night.

² Some teachers may wish to introduce here an explanation of the effects of inclination of the earth's axis, and a more complete study of the seasons. This has not been included in this book because it is felt that, After this date, until September 23, the continued revolution of the earth gradually brings the north pole again toward the shadow. Then, on September 23, the light of the sun once more extends from pole to pole, so that day and night are again equal, and a year is completed.

Thus the seasons follow one another, and our days and nights constantly change in and when the north pole is in darkness, the south pole is bathed in the sunlight.

Figure 285 shows the zones on the earth. How many are there? Name and locate each. The cause of the zones is found in the slant at which zones, and the rays of the sun strike the their boundaries. In the torrid zone they are always either vertical, or nearly so.



Fig. 285. — A map of the zones.

length. And it is all because, as the earth revolves about the sun, the part of the earth that receives the sun's rays is continually changing.

While these changes are in progress in the northern hemisphere, there are also changes in the season, and in the length of day and night, in the southern hemisphere. These changes are of the same kind, but the seasons are exactly changed around; that is, it is winter there when it is summer with us;

unless the teacher has the necessary apparatus, a mere study from the text is too difficult. The authors believe that it is a subject that is better fitted for the high school age.

In the temperate zone, they strike the earth at a greater slant; and in the frigid zones at a much greater slant still. On this account, the heat grows less and less as one approaches either of the poles.

The boundaries of the tropical (torrid) zone are easily fixed, because they mark the points farthest north and south where the sun's rays are vertical at some period of the year. On December 21, when the north pole is farthest within the shadow (Fig. 284), the sun's rays are vertical as far south as the Tropic of Capricorn. On June 21, on the other hand, when the north pole is farthest within the light, the sun's rays are vertical as far north as the Tropic of Cancer.

The north frigid (Arctic) zone is the region around the north pole that lies entirely in darkness on December 21. On June 21, this same region lies entirely in the light. The south frigid zone is the corresponding region about the south pole.

The two temperate zones are merely the wide belts that lie between the torrid zone, on the one hand, and the frigid zones on the other. There is one, called the north temperate zone, in the northern hemisphere, and another, called the south temperate zone, in the southern hemisphere.

Name the boundaries of each of the zones. It is convenient to use such boundaries; but there is really no sharp difference on the two sides of any one of them. Indeed, the real boundaries are quite irregular (Fig. 285); for in some parts of the temperate zone there is a very hot climate; and on the highlands of the tropical zone, the climate is often temperate, or even frigid. These are exceptions, however, and generally the climate is torrid in the tropical zone, temperate to the north and south of it, and frigid around the poles.

Our seasons are likewise due to the slant at which the sun's rays strike the earth at different times of the year. Bow the certh's revolu- On December 21, the midday tion causes our sun is low in the heavens, in the region where we live, and then its rays reach us at the greatest slant. That, then, marks the beginning of our coldest season. On June 21, on the other hand, the midday sun is high in the heavens, and the rays are then most nearly vertical. That, then, marks the beginning of our warmest season. Spring comes as the rays become more nearly vertical; and autumn as they grow less so.

The revolution of the earth around the sun is, therefore, of the greatest importance. It causes our seasons by continually changing the slant at which the sun's rays fall upon us. That affects us in a thousand ways. It determines, for instance, the time when our lamps shall be lighted, when crops shall be planted and harvested, and when the navigation of many of our rivers and lakes shall be opened and closed. It even leads to changes in the kind of clothes that we wear, and greatly

influences the sports that we enjoy. Name some of its other influences.

- 1. State the form and size of the earth. 2. Give proofs that it is round. 3. Tell what you can about its daily motion, and the results.
 4. What is its yearly motion?

 Review
- 5. How are gravity and gravitation important forces? 6. State the effects of the earth's revolution. 7. State the cause of the zones. 8. Of their boundaries. 9. How does the earth's revolution cause our seasons? 10. How, then, does this revolution influence our daily lives?

1. Show by a globe, or a ball, how the two movements of the earth, rotation and revolution, can be going on at the same time.

2. Are the days growing longer or shorter at present?

3. During which months do they grow longer? During which months shorter?

4. At what time of day does your shadow always point directly north?

5. Notice how your shadow changes with the season in early morning; at noon; in the evening.

6. Tell about the direction and length of a man's shadow at noon on December 21 at various points between the poles.

7. On June 21.

8. On September 23.

9. How long is our longest night? Our shortest?

10. Which zone has the slightest change of seasons? Why?

11. Is it once or twice each year that the vertical rays of the sun fall upon any one place in the torrid zone?

II. LATITUDE, LONGITUDE, AND STAND-ARD TIME

1. Latitude and Longitude

In a study of geography, it is often necessary to locate places exactly. This is not so easy as it might seem. Need of some For instance, suppose we wish to state where London is siting places uated; how would it be done? exactly Of course, by taking a long time, it would be possible to describe the general location of this city; but some more accurate way should be found.

The difficulty is much the same as that which arises in locating a place in a large city, where there are thou- How houses sands of houses. No one per- are located son knows who lives in most in cities of them, and if a stranger were looking for a friend, he might have much trouble in finding his house.

A very simple means has been found for locating city houses. For example, a street running east and west may be selected to divide the city into two parts, as Washington

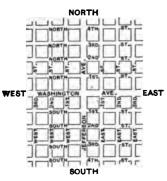


Fig. 286. — Map of a part of a city, to illustrate the need of naming streets.

Avenue does in Figure 286. Any place north of this street is spoken of as being on the north side; any place south of it as being on the south side. The streets to the north of this central street are numbered as North 1st,

North 2d, North 3d, etc.; those to the south of it as South 1st, South 2d, South 3d, and so on. Then if a man says that he lives on North 4th Street, we know at once that he lives on the north side, and that his house is on the fourth street from this central one.

But we need also to know on what part of North 4th Street this house is to be found. To answer that question, another street running north and south, and crossing the east and west ones, may be selected to divide the city into east and west parts. In Figure 286, Jefferson Avenue is such a street. The streets on the two sides of it are numbered as East 1st, East 2d, West 1st, West 2d, etc. (Fig. 286).

Then if a man lives on the corner of North 4th and East 3d streets, we know not only that his home is north of a certain line, but east of a certain other line. If the blocks, as the spaces between two streets are called, are always the same, it will be easy to tell the distance from each of the central streets to the house. Thus the house can be located exactly.

Such a plan is not necessary in small towns and villages, because the people there know one another, and are able to direct strangers easily. Few, if any,

cities follow exactly the scheme here given; but all have a plan somewhat similar to this. If you live in a city, perhaps you can tell just how houses are located there.

Places upon the earth are located in much the same manner as in the city just described. The equator, which How places extends around the earth mid- can be exactly way between the poles, cor- located on the responds to the dividing street earth (Washington Avenue) that 1. How they can be located runs east and west. The dis- in a north and tance between the equator and south direction the poles, on either side, is divided into ninety parts (Fig. 287), corresponding, we might say, to the blocks in a city. earth is so large, however, that these "blocks," or parts, are very much larger, each being about sixty-nine miles wide. That distance is called a degree, and the sign for degrees is a little circle (°) placed at the right of a figure. (For example, 60° means 60 degrees.)

Lines are drawn upon maps and globes to represent these degrees. The lines on a

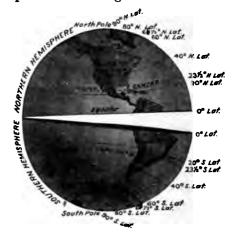


Fig. 287.—The globe, showing the two hemispheres and some of the circles of latitude.

globe extend completely around it from east to west, and are therefore circles. The first circle north of the equator, marked 1°, is about sixty-nine miles from that dividing line; the one marked 2° is twice that distance, and so on. The north pole is 90°

from the equator. The same plan is followed south of the equator; and the south pole is also 90° from the equator. Thus the distance from pole to pole is 180°.

All points on any one of these circles are the same distance from the equator, and from each of the other circles. That is, the circles are parallel with one another; and on that account they are called parallels.

If one finds that a certain place is on the 8th or the 50th, or some other circle north of the equator, he knows how many miles it is north of that dividing line; for every degree is about 69 miles. San Francisco, for example, is close to the 38th parallel; Chicago is close to the 42d; and St. Paul is on the 45th (Figs. 125 and 160). Knowing this, it is easy to see that Chicago is 4°, or about 276 miles, farther north than San Francisco. It is also easy to see that St. Paul is 3°, or over 200 miles farther north than Chicago.

Thus, by the help of the parallel lines one can find how far any place is north or south of the equator. Instead, however, of saying that places are so many degrees north or south of the equator, we usually say that they are in so many degrees north or south latitude. San Francisco, for instance, is near 38° north latitude (abbreviated N. Lat.). Both ways are correct, but the latter is merely the shorter way of saying it. Latitude is nothing more than distance north or south of the equator, measured in degrees; and the parallel lines are called parallels of latitude.

Of course there are no marks upon the earth to show where these circles run. They are drawn on maps, where they are of great use because they help to locate places.

Small maps and globes cannot well show the entire ninety parallels on each side of the equator. That would make too many lines. For this reason, only every fifth or tenth parallel is usually put on such maps. Examine some maps (such as Figs. 9 and 125), to see which ones are given. Near what parallel do you live?

As in the city, some means must also be found for locating places east and west; for two points might be in 10° north latitude and still be several thousand miles

apart. Show that this is so.

Imaginary lines are used for this purpose, as before; but this time they extend around the earth from pole to pole (Fig. 288). These lines, extending through both poles, are called *meridians*.

In a city it makes little difference what north and south street is chosen from which to number the others. It is necessary only that a certain one be agreed upon. The same is true of these meridians. No one is especially important, as the equator is, and any one of them might be chosen from which to start. Indeed, different nations have



Fig. 288. — The earth, cut in halves along the Greenwich meridian, showing some of the meridians. The meridian 20° is usually considered the dividing line between the eastern and western hemispheres.

selected different circles as the one from which to begin numbering. In France the meridian extending through Paris is chosen; in England that through Greenwich, near London; and in America the one passing through Washington is sometimes used.

It is, however, important that all people agree on some one meridian to start from, so that all maps may be made alike. On that account, many countries begin their numbering with the meridian which passes through Greenwich. The maps in this book follow that plan.

It is necessary in locating places on the earth to study the movements of the sun and the stars; and this is done in a building, called an observatory, in which there are telescopes and other instruments. Since there is such an observatory at Greenwich, this seemed to the English people to be a fitting place from which to begin numbering the meridians.

Commencing with the meridian of Greenwich, we measure off degrees both east and west of it. On maps and globes these distances are represented by circles extending completely around the earth, through both poles. Thus there is a meridian 1° west, another 2°, a third 3°, etc. Going eastward, the meridians are numbered 1°, 2°, 3°, etc., in the same way. Any place on the 3d meridian west of Greenwich is 3° west of the principal meridian; if on the 60th meridian, it is 60° west.

Again, however, instead of saying that a place is so many degrees east or west of

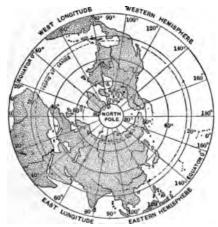


Fig. 289.—A view looking down on the north pole, to show how the meridians come to a point at the north pole. Notice that if the 0° meridian were continued, it would unite with the meridian 180°.

the principal meridian, we say it is in so many degrees east or west longitude. This is merely the shorter way of saying it. The place on the third meridian, just mentioned, is, therefore, in 3° west longitude, and the other place is in 60° west longitude. Longitude is nothing more than distance east or west of the principal meridian, measured in degrees. The circles that form

¹ The ancients thought that the world extended farther in an east and west direction than in a north and south direction. Therefore they called the east and west, or *long* direction, longitude; the north and south direction, latitude.

the meridians are also known as circles of longitude.

Any place on the 20th meridian east of Greenwich is in 20° east longitude (E. Long.). New York is in 74° W. Long., while San Francisco is in about 123° W. Long. Which meridian passes near Chicago? Denver?

The distance around the earth from north to south, through both poles, is four times 90°, or 360° in all. The equator is likewise divided into 360 parts, or degrees. There are therefore 360 meridians, if they are drawn one degree apart. They are numbered up to 180° in both directions (Fig. 289). Thus, 180° E. Long. is the same as 180° W. Long.

The meridians are not parallel, like the circles of latitude. They are farthest apart at the equator, where the width of a degree of longitude is about 69 miles. But all the meridians come together at the poles, as you can see on a globe or on Figure 289. Therefore the width of a degree of longitude becomes smaller toward the poles.

On maps showing only a small part of the earth, the circles of latitude and longitude are too far apart to be of why and how much use. It is therefore degrees are necessary to have still other circles. For this purpose the degrees are divided into parts, called minutes. There are sixty minutes in a degree, as there are sixty minutes in an hour. The minutes themselves are also divided into sixty parts, called seconds.

The sign for a degree is °; for a minute '; for a second ". Thus, 60 degrees, 40 minutes, and 20 seconds north latitude is marked 60° 40′ 20" N. Latexamine some map of a small section of country to find these signs.

Knowing the latitude and longitude of any place, it may, by the aid of a map, be as easily located as a house in a great city. For instance, Den is about 40° N. Lat., and 105° W. Long. It is the fore far to the north and west of New Orleans, whis about 30° N. Lat., and 90° W. Long.

Find the latitude and longitude of some of large cities on the map (Fig. 40). Notice also the only every fifth meridian is marked on this moreover this with the map of New Englander (Fig. 45). Since the latter map represents a subject to the latter map represents a subject to the latter map represents a subject to the latter map of the Holy Land (Fig. 46) which represents a still smaller section. There between the latter map of the Holy Land (Fig. 46) which represents a still smaller section. There between the latter map of the Holy Land (Fig. 46) which represents a still smaller section.

2. Standard Time

n were to travel from New York to ncisco, you would find on arriving ences there that your watch was three hours too fast. The COS reason is that the rotation of h is from west to east. This causes i's rays to fall upon the Atlantic ore than three hours earlier than e Pacific coast. Hence, when it is New York, it is only about nine in the morning at San Francisco. ne steadily changes in going either west, so that no two places on an st line have exactly the same time un.

erly every city used its own sun to time, or local time. This was such a source of great trouble to travelers; for their watches ways wrong when they arrived at aces. When railroads were built, ple began to travel more, and to go distances, the many different kinds time became even a greater incon-

ler to avoid this trouble, our contisted here is been divided into belts, in each of which the railways, and most now of the towns, have agreed to use the same time. Since this time is the standard for all, alts are called the Standard Time. The one in the extreme East, incestern Canada, is called the Coloit; the belt next west of this, which we England, New York, and the other Eastern States, is called stern Time Belt. What are the alled (Fig. 290)?

reling across the country from New York an Francisco, one starts with his watch set andard time for the Eastern Time Belt. while he comes to a place where the time is one full hour; then he sets his watch back n order to have the Central Time. Going ser west to the Mountain Belt, the watch is back one full hour. What is done when

the Pacific Belt is reached? By this arrangement, the same time is used over a very broad belt, and only a few changes of the watch have to be made. State how a watch would have to be changed when one goes eastward from San Francisco to New York.

Our study of longitude helps us to understand what determines the places for changing this time. The earth How the time makes one complete rotation for each time every 24 hours, so that the sun belt is fixed passes over 360 degrees in the course of the day of 24 hours. Dividing 360 by 24 gives



Fig. 290. — To show the Standard Time Belts of the United States.

15; that is, the number of meridians, one degree apart, that the sun passes over in a single hour. Therefore, when it is noon in a place on the 75th meridian, as at Philadelphia (Fig. 290), it is eleven o'clock just 15° west of this, or on the 90th meridian. When it is noon at one point on a meridian, it is noon all along that meridian.

This explains what has determined the boundary lines of the time belts. The time selected for the Eastern Belt is that of the 75th meridian; for the Central Belt, that of the 90th meridian, which is just one hour later. What meridian is selected for the Mountain Belt (Fig. 290)? For the Pacific Belt?

Each of these meridians runs through the *middle* of the belt whose time it fixes. Thus, the eastern boundary of the Central Time Belt is halfway between the 75th and 90th meridians, that is, 82½° W. Long.;

and the western boundary is halfway between the 90th and 105th meridians, or 97% W. Long.

As a matter of fact, the railways do not change their time exactly on these meridians. It often happens that the meridians chosen Why the for boundaries pass through very boundaries for unimportant points, or even cross these time the railways far out in the open belts are not country. Instead of following the regular exact boundaries, therefore, the railways often select well-known cities as the places where the changes shall be made. For instance, Buffalo, Pittsburgh, and Atlanta are the principal cities that lie on the boundary between the Eastern and the Central time belts. Railway time-tables show a change of one hour at these points; and passengers going east or west change their watches one hour here (Fig. 290). Name cities located on other boundaries. Thus it happens that the boundaries where the railways actually change their time are somewhat irregular. But that makes little difference, so long as there is a general agreement as to the location of the boundaries.

It is true that the Standard Time is incorrect for most places. It is the sun that really fixes our time, and at most points Standard Time cannot agree with the sun, or local time. Yet Standard Time relieves us of much trouble, and that is the chief reason for its use.

In order that our system may agree with that of other parts of the world, the time of the Greenwich meridian is taken as a basis. Thus the whole world may be divided into Standard Time belts, with a change of an hour at every fifteenth meridian.

1. Explain the need of some way of locating places exactly. 2. How may houses be located in large cities? 3. How can all places be Review located in a north and south direc-Questions tion on the earth? 4. How in an east and west direction? 5. Locate several places accurately by using a map. 6. Define latitude; longitude. 7. What is meant by a degree? 8. How many degrees of longitude are there on the equator? 9. How many miles is each of these degrees? 10. Why are meridians not parallel? 11. How many degrees of latitude are there from pole to pole? 12. How are degrees subdivided? Why? 13. Explain about the differences in time by the sun, in different places. 14. How have these differences caused much trouble? 15. How is the difficulty now largely avoided? 16. Explain how the time for each time belt is determined. 17. Name the time belts in North America, and locate each. 18. Why are the boundaries not regular?

1. Find how the streets of Washington have been numbered and lettered. 2. What is the latitude and longitude of Boston? Of Washington? Of Chicago? Of your home?

Suggestions 3. Find some cities that are on or near the 42d parallel of latitude. 4. What place is in 25° N. Lat. and 81° W. Long.? What place is near 40° N. Lat. and 75° W. Long.? 5. Find places that have nearly the same latitude as your home. 6. Show on a globe, or map, where a ship would be in the Atlantic when in zero latitude and zero longitude. 7. Examine a globe to see what meridian is a continuation of zero longitude on the other side of the earth. 8. Find the latitude of the Tropic of Cancer; of the Tropic of Capricorn; of the Arctic Circle; of the Antarctic Circle. 9. Where and how much would you change your watch in traveling from San Francisco to Chicago? 10. Examine some railway time-tables to see how they indicate the changes in time. 11. What is the difference, where you live, between Standard Time and solar or sun time? 12. Find out whether the true Standard Time is telegraphed to your city each day, and if so from what place.

III. WINDS AND RAIN

1. Winds

In our study of North America, we have learned that the winds of different sections came from different directions. The problem For example, in the West before us Indies, Central America, and southern Mexico, the winds usually blow from the northeast; but on the western side of the continent, all the way from San Francisco to Alaska, the wind blows quite regularly from a westerly quarter. In the eastern part of the United States, on the other hand, the winds are irregular in direction, although they blow more often from the west than from any other quarter. will now study the causes for these differences, and also learn what the principal winds on the earth are.

It will help us to understand this subject if we first find what currents of air a hot stove causes in a room (Fig. The currents 291). The first thing that of air caused happens when a fire is kin-by a hot stove dled is that the air near the stove is

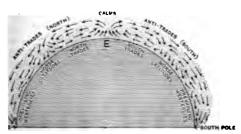
ed. This causes it to expand and le lighter. Then the cooler, heavier other parts of the room settles down lows in toward the stove, forcing up-

the warm, light air the stove. This, rising air grows as it comes in conrith the cool ceiling the walls of the room. makes it dense heavy again; it settles toward the at some distance the stove, and once moves toward the

other words, the curof air keep circling
d in the room, riswhen warmed, and
ig when cooled. In
a room, you can
observe how warm
r is near the ceiling,
it has risen above
ove; and how much

it is near the floor at some distance the stove.

red to this movement of air in a room.



22. — Diagram to show, by arrows, the movement of the greater winds of the earth.

however, the broad torrid zone, which
is warmed by the sun's rays,
takes the place of the stove.
In the torrid zone the hot
e these
ing it to expand and become

lighter, just as the air does about the hot stove. The cooler, heavier air to the north and south of the torrid zone then flows in and pushes the light air up and away.

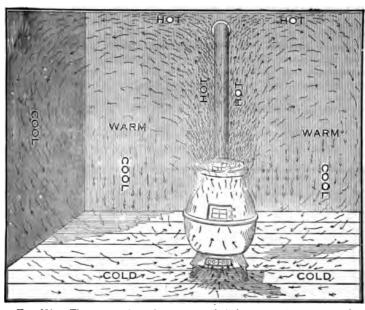


Fig. 291. — The arrows show the currents of air in a room that are caused by a hot stove.

Such a flowing of the air is what we call wind.

This vast movement of the air is illustrated in Figure 292. The letter E stands for the equator. The arrows represent the cooler air, north and south of the equator, as crowding in toward that section, then rising, and returning once more to the north and south.

The air that flows toward the torrid zone causes very regular winds that are called trade winds. They start in both the north and south temperate zones, hundreds of miles away, and blow toward the equator day after day and month after month.

Since the heated air must escape somewhere, it rises far above the surface of the earth, and then flows back in the same direction from which it came. This forms the return trade, or anti-trade winds (Fig.

292). The atmosphere extends many miles above the earth, so that there is plenty of room for two winds, one above the other, blowing in opposite directions.

In Cuba, the Caribbean Sea, and elsewhere, where the trade winds are felt at the surface, one notices that the clouds, far up in the sky, move steadily in the opposite direction. They are being borne along in the anti-trades. When volcanoes in Central America have been in eruption, the ashes that were hurled out from them have been carried hundreds of miles in the opposite direction from that of the trade winds at the surface.

Being cooled on account of its great height, the air of the anti-trades slowly outward and down, and once more (4) is ward toward the heated part. Make a drawing to illustrate these four directions of movement of the air.

There are differences, however, and one of them is especially important. In the room, the currents move directly toward the stove; then, after rising, moves directly away from it. If the earth stood still, the trade winds also would blow directly toward the equator from the north and south; and the anti-trades would blow directly away from it.

Reflects of earth's rotation on direction of these winds

As you know, however, the earth rotates from west to east at a rapid rate. This rotation causes the trade winds to be turned from their straight



Fig. 293. - A diagram to show the principal wind belts of the earth.

settles, some of it coming to the surface at about a third of the distance to the poles. There it spreads out, a part continuing on toward the poles, a part returning to the equator as the trade winds. Point out the arrows that show these movements in Figure 292.

Thus, as you see, these currents in the atmosphere closely resemble those in the room. In both cases air moves (1) in toward a heated place, (2) then up, then (3)

course toward the equator. Those in the northern hemisphere are turned to the right, so that they blow from the northeast instead of from the north. Those in the southern hemisphere are turned toward the left, and therefore they blow from the southeast instead of from the south.

The anti-trades are also turned toward the right in the northern hemisphere, where they blow from the southwest, and toward the left in the southern hemisphere, where they blow from the northwest. The exact reason for this effect of rotation is far too complex to state here; so that only the facts are given without explanation.

It is now easy to see why the West Indies, Central America, and southern The great Mexico receive such regular wind belts winds from the northeast. They lie in the belt of the northeast trade winds just described.

The prevailing west winds of the Pacific coast are a part of the air of the anti-trades that has settled to the surface and is moving on toward the east. If you watch the higher clouds, you will find, in most parts of the U nited States, that they are moving toward the east. Even at the surface, the winds blow from the west more often than from any other quarter. In the northern part of the United States and in Canada, the winds blow so often from the west, northwest, or southwest, that this whole region is known as the region of the prevailing to esterlies.

Regular winds, such as are found in North America, are likewise found in most other parts of the world. In other words, there are several belts of regular winds extending around the earth. Figure 293 shows these clearly. Point out the belt of trade winds north of the equator. Point out the prevailing westerlies. Point out the two similar wind belts on the south side of the equator.

Notice how much more distinctly these belts are shown over the ocean than over There are several the land. by the Finds are reasons why winds blow much Cost regular more steadily over the ocean er the ocean than over the land. The prin-Cipal one is that the temperature of the eter does not change so quickly as that of the land. On the land one place may become much warmer than another not far way, and then winds blow toward the warmer section. This often changes the direction of the regular winds on the land.

That the winds blow very steadily over the ocean is most clearly shown (Fig. 293) in the southern hemisphere, where there is little land. There, in the belt of prevailing westerlies, the wind is almost all the time from the west. Indeed, it is said that

vessels, choosing a course south of Africa and South America, can sail around the world with fair winds almost all the way, if they go toward the east; but if they sail in the opposite direction, the winds are against them.

Besides the four belts of winds just mentioned, there are three other belts in which it is either calm, or else there The belt of are only light, variable winds. calms; and The most important of these the belts of is called the belt of calms light and vari-(Figs. 292 and 293), which is able winds several hundred miles in width. belt is situated where the trade winds from the northeast and those from the southeast die out. It is in this belt that the heated air in the torrid zone is rising. Since it is moving *upward*, no wind can be felt, and this is, therefore, a belt of pre-What winds there are, are vailing calms. usually light and changeable.

Northern Mexico and southern California are situated in another belt of light winds with frequent calms. This is the

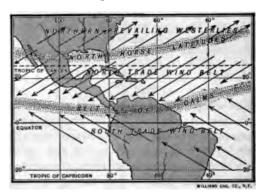


Fig. 294. — Diagram to show the position of the trade winds belts and the belt of calms in summer.

belt where the air of the anti-trades is settling toward the earth; and settling air, like rising pir, does not cause winds. This region is known as the horse latitudes. Point out the belt on Figures 292 and 298.

¹ Called horse latitudes because sailing vessels, carrying horses from New England to the West Indies in the early days, were so delayed by the calms that the horses had to be thrown overboard when the drinking water gave out.

Show the corresponding belt on the south side of the equator.

The belt of most intense heat is not always in exactly the same part of the earth. In June, when

Effects of earth's revolution on all these belts

farther south.

the sun is vertical at the Tropic of Cancer, the belt of greatest heat lies north of the equator; and in December, when the sun's rays are vertical at the Tropic of Capricorn, it lies As the belt of greatest heat thus

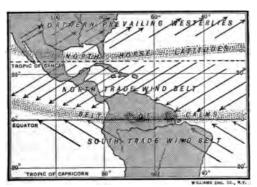


Fig. 295.—Diagram to show the position of the belt of calms and the trade winds in winter.

shifts with the season, the belt of calms moves also. That causes the trade wind belts to move, likewise. Indeed, all the belts slowly shift northward in summer and southward in winter (Figs. 294 and 295).

2. Rain

Knowing the wind belts that encircle the earth, we have a key to the principal rain Relation of belts; for the winds are the winds to rain water carriers of the earth. Water that is evaporated from the surface of the oceans and of the lands, is borne along in the air in the form of vapor. It descends to the earth as rain or snow, falling in great abundance in some places, and scarcely at all in others.

To understand the cause for the change of vapor to rain or snow, it is necessary, Principal first of all, to know that there cause of rain can be more water vapor in warm than in cool air. Quite warm air can hold much more vapor than cold air.

For this reason, whenever air is cooled sufficiently, some of the water vapor which

it bears is condensed. For example, vapor condenses on a cold glass because the air next to it is cooled; and dew forms on grass when the air near the ground grows cool in the evening. In a like manner, the vapor in our breath is condensed, thus forming a little cloud, when we breathe into the cold air of a winter day. Rain is also caused by the cooling of air which contains vapor.

One important cause for the cooling of air is that it expands on rising above the surface. Perhaps you have noticed how cool the air feels as it rushes out from a bicycle tire when you open the valve. The coolness is due to the expansion of the air as it comes out. In a similar way, when air rises above the surface of the earth, it expands, because there is less air above to press upon it. Then it grows cool; and while doing so, some of its vapor may be condensed to form clouds and raindrops.

This is the chief reason why winds from the ocean cause rainfall on mountain slopes and plateaus. The air is forced to rise in order to pass over the highlands, and that allows it to expand and grow cool. For the same reason, air that rises in the warm parts of the earth, like the belt of calms, also gives up vapor to form rain. Briefly, — when air rises, it expands and cools; and then rain usually follows.

On the other hand, air that is settling grows warmer; and, instead of giving up its vapor, it becomes dry and One reason for clear. This may again be il- dry weather lustrated by the bicycle; for when air is pumped into the tire, the pump becomes warm as the air is made denser, or is compressed, by pumping. In a like manner, air that is descending toward the earth's surface is compressed and warmed because of the great pressure of the atmosphere Since there can be more vapor in warm than in cool air, such settling air currents become steadily drier. They cause clouds to disappear, and water to be evaporated from the ground. This is the resson why the horse latitudes are arid belts; for, as you remember, the air in these belts is settling from above. Briefly, —when air descends, it becomes denser and grows warmer; then the sky is clear and the weather dry.

These facts have been well illustrated in the rains of North America. The northeast

trade winds, having gathered a The regular large amount of vapor from the rain belts ocean, deposit it on the wind-1. In North America ward slopes of the West Indies, southern Mexico, and Central America The southwestern slopes of the (Fig. 296). West Indies, however, receive a much smaller quantity of rain; and the western coast of Mexico is quite arid.

Farther north the prevailing westerlies, having traveled a long distance over the Pacific Ocean, likewise cause heavy rains along the western coast of North America (Fig. 297). But these winds also lose much of their moisture in passing over the Western highlands; and the land farther

east, therefore, receives very little

Northern Mexico and the southwestern part of the United States, lying within the horse latitudes, where the air is descending, also receive very little rain and are arid (Fig. 297). This is true even at the seashore in southern California.

Other regions lying within the regular wind belts show the same conditions

of rainfall. For example, note In other what heavy rains the northeast trade winds bring to northern

Asia (Fig. 299), and to the islands near by, such as the Philippine Islands.



Fig. 206. — The rainy east coasts and arid west coasts of the trade wind belts. Also the rainy belt of calms of South America.

In western Asia and northern Africa, on the other hand, these winds deposit little

> moisture, as is clearly shown by Figures 298 and 299. One cause for this is that, before reaching these regions, the trade winds have been blowing a long distance over the land. and not over the oceans. For this reason they have little vapor to deposit. Another very important reason is that the air is moving from a cooler to warmer region, and is steadily be-

coming warmer. Instead of being forced, therefore, to give up its moisture, it takes more vapor. in this region the trade winds take up South America (Fig. 296), to southeastern | water wherever they find it; and instead

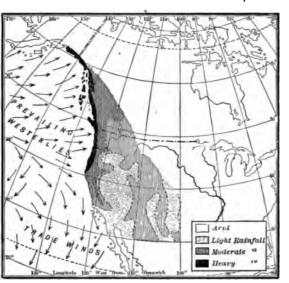


Fig. 297. - The heavy rainfall where the prevailing westerlies blow over the rising coast. What is the condition farther east? What is the case where the trade winds blow? Why?

of causing rain they are really drying winds. This accounts for the Sahara and some other deserts.

The prevailing westerlies reach Europe, as well as North America, and cause abundant

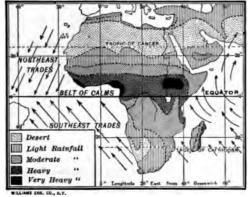


Fig. 298. — To illustrate the desert regions in the trade wind and horse latitude belts of Africa. Also to show the heavy rainfall in the belt of calms. Find the similar belts on Figures 296, 299, and 300.

rainfall on the western coast. Since there are no lofty mountains on the west coast of Europe, however, there is no arid and desert land in this part of the west wind belt. On the other hand, the three peninsulas of southern Europe, like southern California, lie partly within the horse latitudes; and for this reason there is little rain, especially in their southern portion.

South of the equator the southeast trade winds cause heavy rains on the east coast of South America (Fig. 296); 3. In regions south of the then, crossing the continent, equator they give up more vapor in ascending the eastern slopes of the Andes. The air is so drained of its vapor here, that when it descends on the western side of the mountains, there is little left. For this reason the southern parts of Peru and northern Chile, even within sight of the Pacific Ocean, form one of the most desert regions of the earth. Southern Chile, on the other hand, being in the belt of the prevailing westerlies, has plenty of rain (Fig. 299).

Most of Australia is in the southeast trade wind belt. Therefore, rainfall is

ample on the eastern coast; but si highlands on this continent are of the east coast, nearly all the remains the country suffers for want of rai 300). The southwestern tip of A the island of Tasmania, and the sisland of New Zealand, like souther are reached by the prevailing we and for that reason they receive a rain.

The belt of calms is the most rain the belts (Figs. 296, 298, and 300), its hot, moisture-laden air is 4. In rising and cooling. After a of cal clear night in that region, the sun rises in a cloudless sky. As the: advances, and the heat grows more the damp air rises more rapidly; th clouds appear, and they grow stead rain falls from them. Showers o most every day, increasing in the af When the sun sets, and less air r clouds melt away, the stars appear, night is as clear as before. Our hot summer days, with heavy thunder



Fig. 300.—Showing the heavy rainfall on the coast of Australia where the trade winds ble also the arid interior and west coast. Wha dition in the belt of calms? What resemble see to Figure 297?

in the afternoon and evening, illust weather that is repeated, day after this belt of calms.

You have already learned (p. 210) that belts shift northward in summer and sou

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F1G. 299.

winter. Many places in the torrid zone are within the belt of calms during the summer months, and 5. The shifting are swept by the trade winds in the winter months. This is of special importance, because the rain belts of these rain belta shift with the wind belts. divides the year in such places into two seasons: south wind on one day; the next day a cool dry wind may blow from the northwest after two or three days this may give place to a cloudy sky and rain, brought on by sout or east winds; and then fair, cool weather with northwest winds, may again set in.

Fig. 301. — Winds and rainfall in South America and Africa from December to February

(1) a wet season, when the region is in the belt of calms; and (2) a dry season, when the trade winds blow.

The part of northern Africa that lies just south of the Sahara Desert affords an instance of this (Figs. 301 and 302). Find another instance in northern South America. Note what an enormous area in each of these continents is

wet during one part of the year and dry during the other.

wind and rain belts have Regions of irregular rains 1. In eastern United States and Canada (1) Kind of weather here

Thus far only the regular been considered. From what has been said, one might expect that the west winds, so dry

after passing over the highlands of western United States, would continue eastward and

cause our Central and Eastern States to be arid. As a matter of fact, we know that abundant rain falls in this section, as shown by Figure 303. We know, too, that there are no very regular winds over this entire area; on the contrary, both winds and temperature are quite changeable. In any particular locality it may be warm and pleasant, with a

The reason for such change able weather here is that th region is crossed (2) The reason by great storms, for such moving from weather west to east. When suc storms begin in the Nortl west, there is a large area the with lighter air than that ove the surrounding region. Suc an area is called a low pressu area (Fig. 304). The heavie air, from the surroundin country, flows toward this lo

This causes winds which pressure area. on the south side blow from the south, c the east side from the east, and so for (Fig. 304).

The air that flows in from all sides ris near the center of the low pressure are

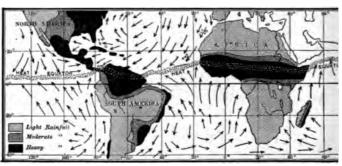
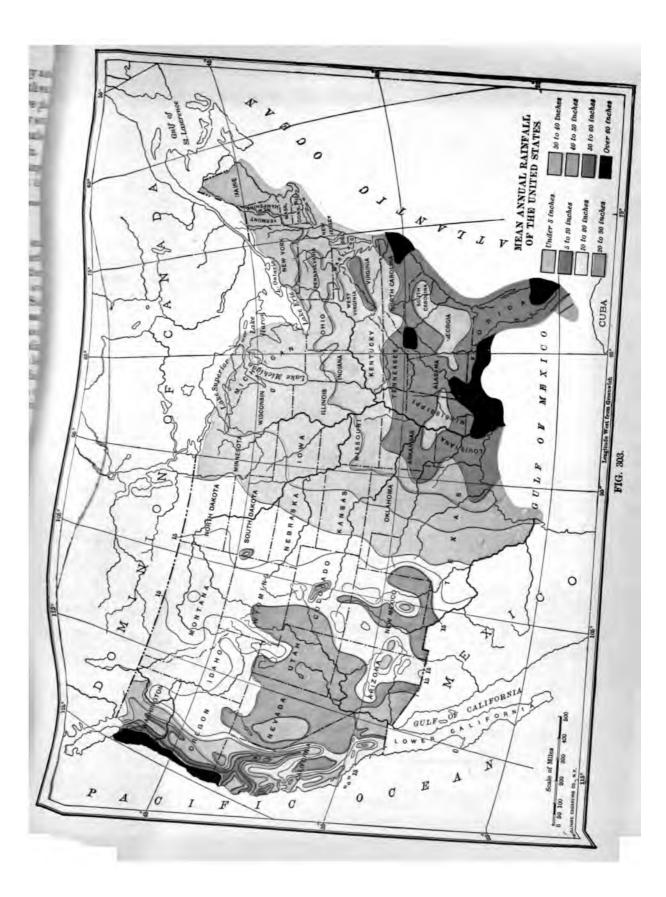


Fig. 302. - Winds and rainfall in South America and Africa from June August. Compare with Figure 301 to see how the belts of heavy r have migrated as the wind belts have shifted with the change of seas

As it rises, the vapor condenses, forming clouds and rain, as in the belt of calm Such an area of low pressure, with its cloud and rain, is known as a cyclonic storm an (Fig. 305).

Instead of remaining in one place, th cyclonic storms travel steadily onwar usually beginning in the northwest, an



• vays passing eastward (Fig. 306). The ths followed by the storm centers generate move ally pass over the Great Lakes,

The moveut of the cyic storms,
I their extent

any pass over the Great Lakes,
and down the St. Lawrence
Valley to the ocean. They
move eastward because the

evailing westerlies carry em along; indeed, these eat cyclonic storms appear be whirls, or eddies, in e prevailing westerlies, mewhat like the eddies in e current of a stream.

These storms bring most the rain that falls in the lited States and Canada, tof the Rocky Mountains. e area of country upon ich the rain may be falling in the clouds of one of the clonic storms is sometimes by great. Indeed, places ly a thousand miles apart netimes receive rain at same time, from the same im (Fig. 305). As the

rm moves eastward, the weather begins clear on the western side (Figs. 304 d 306).

The vapor that causes the rain in these storms is ught from the Gulf of Mexico and the Atlantic

places, tornadoes, often called cyclones, in which the winds blow so fiercely that houses are torn to pieces (Fig. 307).

After a low pressure area has passed eastward, and the storm is over, the wind generally blows from the west. This causes cool, dry weather in summer, and cold snaps in winter. The latter are often so

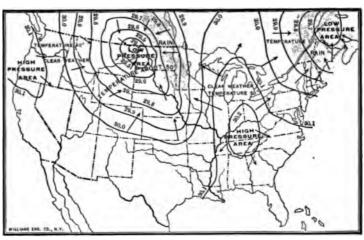
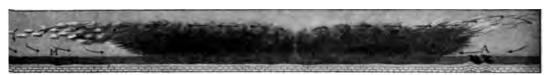


Fig. 304.—A weather map of the United States on a winter's day. The lines are lines of equal air pressure,—the lower the figure, the lighter the air (29.5 representing lighter air than 29.7). The pressure is determined by an instrument called the barometer.

severe that they are called *cold waves*; and these, sweeping over the East, and even in the South, often do great damage to fruit trees and delicate plants.

While the cyclonic storms are quite irregular, they are almost certain to come



. 305. — A diagram section through a cyclonic storm area. The arrows show the direction of the winds; the shaded area represents cloud and rain. Such a storm covers a very large area, often from the Mississippi River (M) to the Appalachian Mountains (A).

an, being carried by the winds for hundreds of es, even into Canada.

Not only are rains caused by these storms, but spells, and other changes as well. Warm winds,

Their differeffects on the ther

blowing from the south toward the cause of the winter thaws and the summer hot spells, which are common in the

hot spells, which are common in the stern and Central States. It is during the hot lis that thunder storms come; also, in some

whenever a wide area of low air pressure appears in the West. Thus, by watching the pressure of the air, as (5) Possibility shown by instruments called of predicting barometers, it is possible to these storms predict such a storm; and since they always move toward the east, it is possible, by further study of the barometer, and of

the winds, to predict their course somewhat accurately, and thus warn people of their coming.

This work is so important that the United States government employs a large force of

PRESSURE VERY COLD SELECTION TO SELECTION TO

Fig. 306. — Weather map for the day following that of Figure 304. Study this carefully, and tell how it differs from Figure 304.

men, stationed in different parts of the country, to observe the pres-(6) How the presure of air, direction of wind, dictions are made, and how etc. The observations are people are made at the same time at all warned stations, and telegraphed to the central office at Washington. special branch of the government, called the Weather Bureau, has been established to have charge of this work.

The storm predictions are telegraphed from Washington to all parts of the country, so that one knows what kind of weather to expect a full day before it comes. These predictions are usually printed in the newspapers, as you no doubt know.

Maps, called weather maps, are also sent out in great numbers. Figures 304 and 306 are made from such maps. Figure 304 shows a cyclonic storm in the Northwest, the arrows indicating how the winds blow, from all sides, toward the center of low pressure. Farther east is a region of high pressure. In Figure 306, the high and low pressure areas are again represented; but, since it is a day later, they have both moved eastward; and the following day they would be still farther east.

From these maps you can see how the direction

of the wind, for any one locality, changes as the low pressure areas pass over the country. By them, also, any person may see what the weather promises to be in all parts of the country, and may follow the changes from day to day.

By the predictions of the Weather Bureau, farm-

ers and gardeners are warned against damaging frosts, and sailors (7) Value of such warnings against severe storms. Hundreds of thousands of dollars are saved in this manner every year. Especially valuable service has been rendered by the Weather Bureau in predicting the fierce hurricanes that start in the West Indies and sometimes do great damage there, as well as on our own coast (Fig. 808). These resemble the cyclonic storms, but are much more destructive. They often pass along our eastern coast, and then eastward out into the Atlantic.

Since the storms and high pressure areas have so great an influence on our weather, you will find it of interest to study the weather yourself. Watch the changes in

wind, temperature, clouds, and rain; and if there is a barometer at hand, observe how it changes as the high and low pressure areas come and go. You might also examine the weather map and watch the weather that follows, to see how accurately them map predicts the weather.



Fig. 307.—A house, one side of which was blown off during the passage of a cyclone.

Since Europe, like the United States, is mainly in the belt of prevailing westerlies,

it also is visited by cyclonic storms. Many
of the storms that cross our country pass
over the ocean and travel for

Regions of into Eurasia before they die out. There, as here, the area

upon which rain may be falling during one of these storms is sometimes very great. As in our country, the weather is made changeable by these storms; it may be warm and pleasant one day, stormy the next, then clear and cool, or cold.

Similar cyclonic storms

develop in the prevailing

s. Such regions the southern he misphere

there, too, they cause changes

temperature, wind, and

in. For this reason the weather of southern

outh America, Australia, and the islands of the

uthern Ocean resembles our own.

Bay of Bengal

Boy Bengal

Heavy Rainfall

Heavier Heinfall

Heavier I in the World

309.—The winds and rainfall during the summer monsoon of India.

There are other causes besides cyclonic storms for interference with the regular winds of the earth, and therefore with the rainfall. One of these is the difference in temperature between land and water.

Land warms and cools much more quickly than water. For this reason the land along the sea-

shore soon becomes warm on a hot summer morning, while the water near by remains cool. The air over the warm land is heated, as over a stove, so that it expands and grows light; but that over the water remains cool, like the sea itself.



Fig. 308.—A scene in Galveston, showing the vast destruction done by a hurricane in 1900, when many of the houses were torn to pieces during the storm.

This cooler air, being the heavier, then pushes in toward the shore; and thus a breeze from the sea, or a sea breeze, is created. In summer such a breeze is frequently felt at the seashore and along the shores of large lakes; and it often changes a very hot day into a cool one. Often, also, it brings a shower of rain, especially in the warm lands of the torrid zone. At night the land cools more rapidly than the sea; and the cool air from the land blows out toward the sea, forming a land breeze. Then the weather is clear.

The sea breezes blow only for short distances. But when a large body of land, like a continent, becomes warm, air from the cooler ocean may blow toward it for hundreds of miles. In winter, on the other hand, when the land becomes cooler than the ocean, the cold air over a vast area may move toward the sea. Such winds exist in Mexico and our Gulf States; but they are far more important in Asia.

The interior of that vast continent is so far from the ocean, that there are naturally great changes in temperature from summer to winter. During the winter, the heavy air over the cold land settles down as drying air, and presses outward beneath the warmer air which lies over the ocean. This produces dry winds from the land (Fig. 310). In summer, on the other hand, the air over the cool water crowds in, raises the heated air of the continent, and produces ocean winds and rain (Fig. 309).

Winds which thus blow in opposite directions in different seasons, are better developed in India than in any other part of the earth; and it was here that they received the name, monsoon winds. The name monsoon is now given to this class of winds wherever they may blow.

The rainy season comes in India when the summer monsoons blow (Fig. 309); and the rainfall is especially heavy where the moisture-laden air ascends the steep slope of the Himalayas. Indeed, the region north of the Bay of Bengal receives the heaviest rainfall of any part of the earth (Fig. 309). Here, in the month of July alone, there is three times as

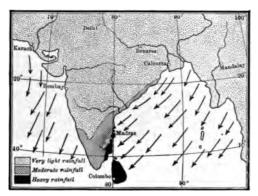


Fig. 310. — Map of the winter monsoon winds and rainfall of India. Compare with Figure 309, and notice how very light the rainfall is in one season, and how heavy it is in the opposite season.

much rain as falls in the eastern part of the United States during the entire year. The winter monsoon, on the other hand, is so dry that vegetation withers and the soil becomes parched and cracked, as in a desert

1. Explain the currents of air that are caused by a hot stove in a room. 2. Show how the principal winds of the earth resemble these Review currents. 3. Name the principal **Ouestions** winds of the earth. 4. What is the effect of the earth's rotation on the direction of these winds? 5. Locate the principal wind belts on the earth's surface. 6. Why are the winds most regular over the ocean? 7. Locate the belt of calms; and the two belts of light and variable winds. 8. What is the effect of the earth's revolution on the location of these wind belts? 9. What is the relation of winds to rain? 10. Explain the principal cause of rain. 11. Give one reason for clear, dry weather. 12. Locate the regular rain belts in North America. 13. In other regions north of the equator. 14. In regions south of the equator. 15. In the belt of calms. 16. Explain about the shifting of these rain belts. 17. Describe the more irregular weather in our Eastern States and in eastern Canada. 18. Explain the reasons for such weather. 19. In what direction do the cyclonic storms move, and what is their extent? 20. How do cyclonic storms affect our weather? 21. What about the possibility of predicting these storms? 22. How is that work managed? 23. How are the warnings of value? 24. What about regions of irregular rains in Europe? 25. In the southern hemisphere? 26. Explain the causes of sea breezes and land breezes. 27. Account for the different directions of the wind in southern Asia in summer and winter. 28. What effect have the summer monsoons of India on rainfall? The winter monsoons?

1. Estimate the number of barrels of water that falls on an acre of ground, or upon a city block, in one year, where the rainfall is forty inches. 2. How is a movement of air secured in your schoolroom in order to ventilate it? 3. Make a drawing to show the direction of the regular winds of the earth. 4. Watch the higher clouds to see in what direction they are moving. 5. Read once more the section on "Air" in the First Book, p. 54. 6. Write an account of the changes in weather for five days in succession: the wind direction and force; the clouds; rain; temperature; and, if possible, the air pressure. 7. Read the chapter on winds and storms in Tarr's "New Physical Geography," pp. 255-274.

IV. OCEAN MOVEMENTS, AND THEIR RE-FECTS; ALSO DISTRIBUTION OF TEMPER-ATURE

1. Ocean Movements, and their Rffects

Like the air, the ocean water is in motion. Its three principal movements are wind waves, tides, and ocean currents. The movements of the water, like those of the winds, are of the greatest importance to us.

(1) Wind Waves and Tides

Waves are formed by winds which blow over the surface of the water and ruffle it. Sometimes, during storms, the heavy winds pile up the water in waves that are from twenty to forty feet high. Even such great waves are rarely very dangerous to large vessels in the open ocean; but upon the seashore they do great damage to vessels, and even to the coast itself. The constant beating of the waves is slowly wearing the rocks away and drag-

the fragments out to sea, thus cutting oast back.

ople living upon the seacoast know the ocean water rises for about six hours, and then slowly falls for the same period. This rising and falling of the water, each day, forms what is known as ides.

cause

Bay of Fundy, the tide reaches a height of forty or fifty feet.

The height of the tide also varies from day to day; for the moon and sun, which combine to form it, do not always work together. At new moon, and at full moon, — when the earth, moon, and sun are nearly in a straight line, — the moon and sun pull together. They then make the tidal wave higher than at the quarter, when the sun is pulling in one direction and the moon in another. The high range of tides at full and new moon are called *spring* tides; those at the quarters, neap tides.

In the open ocean, the tides are of little or no consequence. But along the coast,

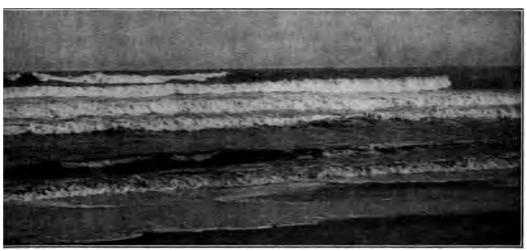


Fig. 311. — The ocean waves running on to the beach in great breakers.

a result of much careful study, it has been d that the tides are caused by the moon and n, especially the former. Each of these bodies ing upon the earth, by the attraction of gravi, much as a horseshoe magnet pulls upon a of iron. Since the ocean is a liquid, this "pull" it slightly out of shape. This causes two swells, or waves, many hundreds of miles broad, leach side of the earth. They sweep across eans, following the moon, and, on reaching the cause the rise of water known as the tide.

upon islands in the open ocean; but it ght of the rises a great deal higher in many bays because the space it occupies becomes narrower near the of the bay. In some places, as in the

where the water rises and falls against the beaches and cliffs, they are of much importance. Where the coast 4. Effects of is irregular, the tide is often tides changed to a current, which sometimes moves so rapidly that a sailing vessel cannot make headway against it, but must wait until the tide changes. Such a rapid current is found in one of the entrances to New York harbor, at what is known as Hell Gate, where the channel is narrow and rocky.

These tidal currents move in one direction during the incoming, or *flood*, tide, and in the opposite direction during the outgoing, or *ebb*, tide. They sometimes drift vessels out of their course and place them in dangerous positions. Many a ship has been wrecked upon a coast where it was drifted by the tidal currents.

The tidal currents often carry mud and sand hither and thither, building sand bars opposite the mouths of harbors. This is one of the reasons why the government is obliged to spend large sums of money every year in improving our harbors. For example, the tidal currents bring large quantities of sand into the mouth of New York harbor near Sandy Hook, and along the coast farther south.

(2) Ocean Currents

The winds which blow over the ocean, forming waves, also drift the water before Main cause of them. You yourself can cause ocean currents such a movement, in a small way, by blowing on the surface of a pail of drift of water, pushed along by the prevailing winds. In this way a great system of ocean currents is formed (Fig. 312), which have an important influence on the temperature of the earth.

In our study of North America it was several times necessary to refer to two of these currents, the Gulf Stream and the Labrador Current. We shall now study the ocean currents, on each side of our continent, more fully.

In the eastern part of the Atlantic, where the trade winds blow, the surface water on the two sides of the equator The North drifts slowly in the direction Atlantic Eddy of the trade winds; that is, toward the belt of calms (Fig. 293). The water then

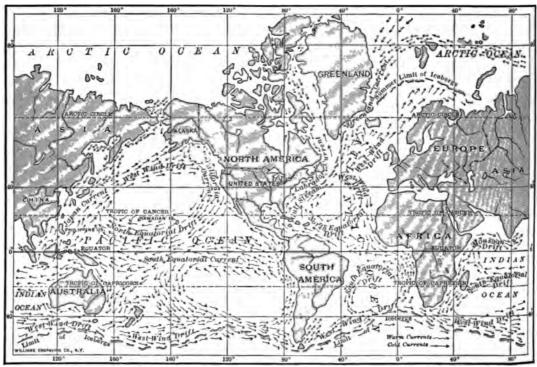


Fig. 312. — A chart showing the principal ocean currents and ocean drifts of the world.

This starts a current, or drift, of water. surface water in the direction of the moving Where the winds blow steadily, as in the trade wind belts, there is a permanent | There the drift of water is divided, a part

moves westward, as a great Equatorial Drift until it reaches the coast of South America which interferes with its course (Fig. 812). g turned southward, while the greater ion proceeds toward the northwest. ne part that flows northwest is turned ard the right by the effect of rotation, he winds are (p. 208); and the part flows into the South Atlantic is turned ne left, also by the effect of rotation. northern drift keeps turning to the t, and therefore, instead of continuing g the American coast, swings out into Atlantic toward Europe. Continuing

rn, it then passes southi, and finally returns to trade wind belt, where tarted, having made a plete circuit. This cirr drift of water in the h Atlantic is called the h Atlantic Eddy (Figs. and 313).

ming from the equatorial n, the water in this huge is warm, and in it live tless millions of animals loating plants. Among the , one of the most abundant seaweed, called Sargassum, of which is thrown into the le of the great eddy. There as collected until it now s a grassy, or Sargasso, sea, reds of square miles in ex-Since the Sargasso Sea lies

tly between Spain and the Indies, Columbus was aries of these are of discovery; and his

aries of these are able to detect the aries of these are are are are are are are arready and his

a, upon entering it, were much alarmed lest

might run aground, or become so entangled in reed that they could not escape.

portion of the drift of water which es toward the northwest along the northern coast of South America, 3mlf enters the Caribbean Sea and passes into the Gulf of Mexico. is a broad, deep, gently flowing current these inclosed seas, which are so nearly ounded by warm tropical lands that the or grows even warmer than it was before. fter swirling slowly round the Gulf of ico, the water escapes between Cuba

The current then becomes and Florida. known as the Gulf Stream (Fig. 313), because it comes from the Gulf of Mexico. Being forced to pass out through so narrow an opening, its rate of movement is much increased, as water in a hose is made to increase its speed by passing through the Measure the distance from Key nozzle. West to Havana (Fig. 205). Near here the Gulf Stream flows as fast as four or five miles an hour.

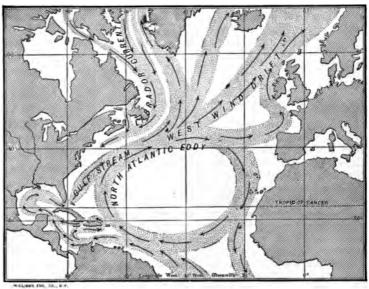


Fig. 313. - A diagram to show the currents of the North Atlantic. In order to illustrate the currents clearly it has seemed necessary to make them as if they were sharply bounded, like a river in its channel. However, the boundthey were sharply bounded, like a river in its channel. However, the boundaries of these great currents and drifts are so indefinite that one would not be able to detect the boundaries.

Being turned to the right by the effect of the earth's rotation, the Gulf Stream soon leaves the American coast and flows northeast toward northern Europe. It broadens rapidly and joins forces with the western part of the great North Atlantic Eddy. In crossing the Atlantic, this combined current, or drift, is pushed along by the prevailing westerlies, so that it reaches the shores of northern Europe, and even enters the Arctic Ocean. In this part of its course the current is called the West Wind Drift. Some idea of its volume may be gained from the fact that it carries many times as much water as all the rivers of the world together.

Some of this water returns in a cold surface current, called the Labrador Current, The Labrador which flows southward along Current our northeastern coast (Fig. 813). Starting from among the islands of northern North America, the Labrador Current flows past the coast of Labrador, Newfoundland, Nova Scotia, and New England as far as Cape Cod. Like all ocean currents in the northern hemisphere, it is turned toward the right; that is, since it flows southward, toward the west. causes it to follow our coast very closely, keeping nearer our shore than the Gulf Stream does.

Since there are two currents near together, a cold one from the north, and a warm one from the south, a vessel sailing from Boston to England must cross both. In winter, during a storm, a ship often becomes covered with snow and ice while in the cold Labrador Current; but soon after entering the warm current this all melts away.

Where the cold and warm currents approach each other, dense fogs are common. The reason for this is that warm, humid winds from the Gulf Stream are chilled in crossing the Labrador Current. This causes some of the vapor to condense and form fog particles. The region near the coast of Nova Scotia and Newfoundland is one of the foggiest regions in the world, and therefore dangerous to vessels.

In the Pacific Ocean, as in the Atlantic (Fig. 312), the water is driven before the Currents in the trade winds. Thus a broad North Pacific drift is formed, moving westward in the belt of calms. Then a warm current swings to the right past Japan, crossing the ocean toward Alaska. is called the Japanese Current. Continuing to turn to the right, this ocean drift passes southward to complete the vast There is also a cold current from the north, between the Japanese Current and the coast of Asia, corresponding to the Labrador Current in the Atlantic, though smaller and not so cold.

From what has been said, we see that the northeastern coasts of both North America and Asia are swept by ocean currents from the cold north. On the other hand, the northwestern coasts of Europe and North America are approached by warm drifts of water from the south.

In the South Atlantic, South Pacific, and Indian oceans, there are eddies similar to those of the North Atlantic and the North Pacific.

There is one very important difference, however. In the southern hemisphere the currents are turned to the left, instead of the right, by the effect of rotation. Some of the water of these eddies joins the broad West Wind Drift of the distant southern ocean; but much of it turns northward until it once more reaches the trade wind belt, thus completing the eddies (Fig. 312).

The cold Labrador Current greatly influences the temperature upon the neighboring land; for winds that blow over the Labrador Currents on rent are cooled, and carry the North America chill far inland. This is one of the reasons why the east winds of New England are so cool, and why the New England coast is such an agreeable summer resort.

The Labrador Current bears with it much ice from the Arctic region. Some of this is sea ice, or "floe ice," which has been frozen during the preceding winters, and some of it is in the form of gigantic icebergs which have broken off from the Greenland Glacier. Seals are commonly seen in the floe ice, and occasionally a polar bear, which preys upon the seal (Fig. 314).

Most of the sea ice melts before reaching Newfoundland; but the icebergs may be carried southward one or two thousand miles before the air and water melt them away. (See limit of icebergs on Figure 312.) Indeed, some icebergs float even as far south as the paths followed by vessels which cross the Atlantic. Since many of these bergs are larger than a large building, collision with one means ship wreck; therefore sailors need to use great caution, especially when a ship is in the fog.

While winds from over the Labrador Current are chilly, those that blow from over the Gulf Stream are 2. Effects of the warm. They are also humid. Gulf Stream During cyclonic storms, winds from the warm waters off our southern coast often

arry both warmth and moisture far into he interior of the country. These winds reatly temper the climate of our Eastern nd Central states, so that the Gulf Stream, s well as the Labrador Current, has an

mportant influence on our

limate.

The winds that blow over he warm waters of the North Pacific cause the Effects of climate of the rarm currents ı the North Alaskan coast to acific be far warmer han that of southern Labrador n the same latitude. These revailing west winds also ring an abundance of vapor o the Pacific coast, all the way rom California to Alaska.

Where these winds blow, the vinters are mild and the rain ieavy; but the summers are ool, because the ocean water, hough warmed, does not be-

some greatly heated. On a globe notice hat the state of Washington, with its pleasant climate, is in about the same latiude as the bleak island of Newfoundland, whose shores are bathed by the Labrador

The warm West Wind Drift of the North Atlantic is of special benefit to the Old World. When Nansen Effects of curstarted on his famous journey ents in other toward the north pole, he egions 1. On the Arctic entered the Arctic)cean where this current does. was able to proceed much farther north than would have been possible along any other route, because the warm drift of water keeps this part of the Arctic free from ice in summer. Notice, on Figure 312, how much farther north the limit of icebergs is on the coast of Europe than on the American coast.

The west winds, warmed in passing over the West Wind Drift, have B. On western made possible the great civil-Europe

ized nations of northern Europe. Notice on a map, how many large cities of northern Europe are in the same latitude as desolate Labrador. How different these two regions are! One is highly civilized and densely



Fig. 314. — A polar bear hunting seal on the floe ice that is floating southward in the Labrador current.

settled; the other is occupied only by scattered savages. This difference is due largely to the ocean currents and the winds that blow over them.

When our first settlers came from England, they expected to find, in the New World, a climate like their own in the same latitude. They were not prepared for the severe winters which they did find; and largely for that reason the first settlements on the New England and Canadian coasts were failures.

The cold current off the northeastern coast of Asia affects that region much as the Labrador Current does northeastern North Amer-The winds that blow over it chill the Siberian coast, and cause the harbors, like that of Vladivostok, to be icebound in winter. This explains why Russia desired to hold the Chinese harbor at Port Arthur, south of Korea, as a terminus of the Siberian railway, - so that her commerce and war ships might not be shut up in winter by ice.

2. Distribution of Temperature

As a rule, the farther north one travels from the equator, the colder it grows; but this is by no means always the case. As Why places in the same latitude may have different tem-

peratures

we have seen, there are several causes which interfere with this regular decrease in temperature toward the poles.

The presence of highlands is one cause. It is a well-

in northern Minnesota is more than 65°, while at New York City it is not over 50°.

The winds are a third cause greatly influencing the temperature. Where the prevailing winds are from the ocean, they cause an equable climate, as in California, near San

> Francisco and farther north. Where they blow from the land, on the other hand, they are cool or cold in winter, and warm or hot in summer.

A fourth cause for such difference in temperature is found in the ocean currents, as you have just seen. Give several examples of the influence of ocean currents.

If, therefore, we were to draw a line across the continent of North Meaning of America, con- isothermal necting several lines, and points that have their value

the same average temperature during any one month, or dur-

ing the entire year, it would need to be & very irregular one, with some parts reaching much farther north than others. Such lines tell so much about temperature, in so

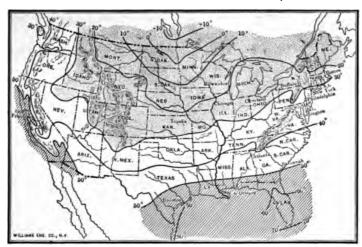
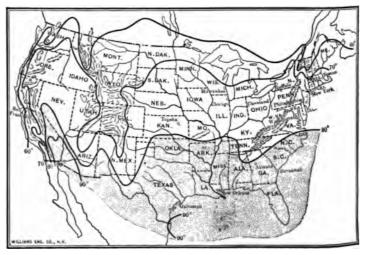


Fig. 315.—Isothermal chart of the United States for January. Why is it colder in the interior than on the east coast? Why so warm on the west coast? Can you notice any influence of mountains?

known fact that high mountains have a cold climate, even though in the torrid zone; and, for the same reason, plateaus may be colder than the lowlands farther north.

A second cause is the fact that land warms and cools much more rapidly than water (p. 217). This is the reason why land becomes hotter than the ocean in summer, and colder in winter. Thus, in northern Minnesota, far from the ocean, the average temperature in January is below zero, while in July it is about 65° (Figs. 315 and 316). In New York City, on the seacoast, the average in January is about 25° and in July not quite 75°. Thus the difference between the summer and winter months



Why is it cooler on Fig. 316. — Isothermal chart of the United States for July. the west coast than on the east coast?

ittle space, that it is the custom to make naps to show them, as in Figures 315 and 116. Since these lines connect the places hat have the same temperature, they are alled isothermal lines, or isotherms (iso neans equal; thermal, heat). A map or hart, showing the isotherms, is called an sothermal chart (Figs. 315 and 316).

which is cold in winter and warm in summer.

Figures 317 and 318 show similar isotherms for the whole world. Observe how these bend toward the equator where they cross mountain chains. Comparing these two figures, you will notice that the winter isotherms of the north temperate zone bend toward the equator over the continents. This is because the land is colder than the ocean. Dur-

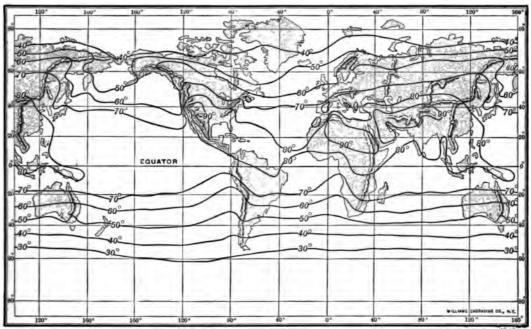


Fig. 317. - An isothermal chart of the world for July.

Trace several of the isotherms across the Inited States and explain why they bend as they do. Note that the isorifferences beween January therms on the western coast extend north and south, almost nd July isoherms on land, parallel to the coast. This is rith reasons because the prevailing westeries bring the nearly uniform temperature of the Pacific Ocean to the land. s only about 20° difference between the vinter and summer temperatures on the western coast; but on the eastern coast of the United States the difference between summer and winter is much greater. Here, while some of the winds are from the ocean, still more are from the land, ing the summer, on the contrary, the isotherms curve poleward on the continents. On what continent are these bends most striking? Why? What effect of the West Wind Drift do you find in Figure 318?

Notice also that the isotherms of the North Atlantic are close together as they leave America, but spread apart, like a fan, toward the Old World. On the American side, the ocean currents approach each other, one from the north, bearing Arctic coll, the other from the warm

south. This causes a great difference in temperature between our northern and southern coasts. On the European side of the Atlantic, on the other hand, one part of the warm West Wind Drift passes northward, raising the temperature and bending the isotherms far northward. Another part of the current turns southward. This water, flowing into a

warmer region, is somewhat cooler than the surrounding water. It therefore lowers the temperature and causes the isotherms to bend southward. Thus the isotherms are spread apart.

In the southern hemisphere, where there is less land, these differences are not nearly so striking. You can, however, find some bends of the isotherms near South America, Africa, and Australia. But south of these continents, where it is all water, the

and what is their value? 21. What are isothermal charts? 22. Trace some of the isothermal lines across the United States for January and for July, and explain their differences. 23. Explain the direction of isotherms on the North Atlantic. 24. Find on the maps other bends of the isotherms in crossing the ocean, and account for them. 25. Why are the isotherms so much more nearly parallel in the southern than in the northern hemisphere?

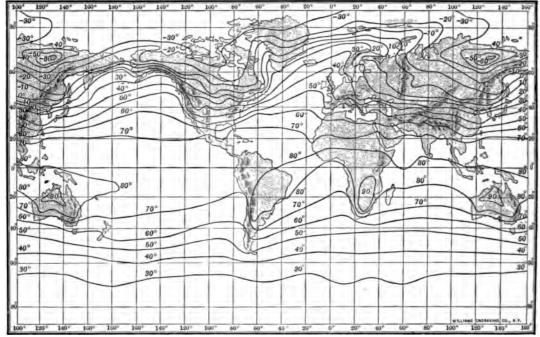


Fig. 318. - An isothermal chart of the world for January.

isotherms run nearly east and west, almost parallel to the circles of latitude.

1. What are the three principal movements of ocean water? 2. Tell what you can about the wind waves. 3. What are tides? 4. Explain their cause. 5. What about **Ouestions** their height? 6. Mention some of their important effects. 7. Explain the main cause of ocean currents. 8. Describe the North Atlantic Eddy. 9. The Gulf Stream. 10. The Labrador Current. 11. The currents in the North Pacific. 12. The eddies of the southern oceans. 13. Explain the effects of the Labrador Current on North America. 14. Of the Gulf Stream. 15. Of the warm currents in the North Pacific. 16. State the effects of ocean currents on the Arctic Ocean. 17. On western Europe. 18. On northeastern Asia. 19. Give four reasons why places in the same latitude may have different temperatures. 20. What are isothermal lines,

1. If your home is upon the seacoast, find out about the high and low tides there. 2. What course might a vessel take in order to be carried from Europe to America, and back again by ocean currents? 3. How do vessels try to avoid running into one another in dense fogs? 4. Learn more about Nansen's voyage. 5. Which of the isothermal lines on Figures 315 and 316 is nearest to your home? 6. Which isotherm on Figure 315 runs near New York and northern New Mexico? 7. On Figure 316, what isotherm runs through northern Maine and San Francisco? 8. How about the distance of these points from the equator? 9. Locate the cold ocean currents of the world; the warm currents. 10. Estimate the length of the circumference of the great eddy the North Pacific. 11. How does Figure 318 sho the effect of the warm current on the norther coast of Russia?

V. PLANTS, ANIMALS, AND PEOPLES OF THE EARTH

1. Plants and Animals

In our study of North America (p. 14) we found that there was little plant and animal life in the northern Life in the frigid zone part of the continent. Give the reasons. What plants are found there? What about insect life? What large land

animals are found, and how do they manage to live?

The life upon the tundras of northern Europe and Asia corresponds closely to that on the barrens of North America; and the few people found there live in much the same way as the Eskimos of America. North Besides the dog, however, the people of the tundras have the reindeer as a domestic animal (Fig. 319).

What countries of the New World are at least partly included Life in the torrid zone within the torrid zone (Fig. 285)? Describe the climate of this

part of North America (p. 19). What about the plant life found there (p. 19)? The animal life (p. 22)?

What portions of the Old World lie in the torrid zone? Extensive and dense for-I. In the rainy ests are found in the rainy section of this zone in the Old World, as in the New. Animal life is abundant, too, since there is so much food.

Among the animals insects are especially common. Some, like the beautiful butterflies, thrive because of the great number and variety of tropical flowers; others, like many species of ants, live in the decaying wood; and still others have their homes in he ground. Some are harmless; but many, like the ants, which swarm in vast numbers, are very troublesome.

There are many birds, too, including humming birds, parrots, paroquets, birds of paradise, and other species, which are far famed for their beauty. Among the mammals there is less variety and abundance. Some, like the monkeys and sloths (Fig. 339), are tree dwellers; others, like the tapir, live in the swampy undergrowth. Some very large animals, such as the rhinoceros and



om Ratsel's History of Mankind.

Fig. 319. — A camp in the tundra of northern Asia. The reindeer are used for drawing the sleighs and also as a source of milk and meat.

elephant (Fig. 460), still live in the dense forest, where it is difficult to hunt them. Occasionally, too, fierce animals, such as the tiger (Fig. 320), lurk in the densely growing vegetation, ready to pounce upon the more defenseless, plant-eating animals.

Reptiles also thrive in the warmth and dampness of the forests. Great boa constrictors twine themselves, like huge vines, among the trees and underbrush; and poisonous serpents are common. The bodies of standing water encourage water life, - for example, the turtle and alligator among reptiles, and the hippopotamus and manatee among mammals.

The labor required to clear away the dense tropical forest, and to keep it clear for farming, is far greater than in the temperate region of our country. This difficulty is increased, too, by the extreme heat, and by the damp, unhealthful climate. For these



Fig. 320. — The tiger which lurks in the jungles of India.

reasons, in spite of the very fertile soil, the zone of dense tropical forests is almost everywhere sparsely inhabited; and in

nearly every case its inhabitants are indolent savages. They have become accustomed to the climate, and they easily secure an abundant supply of food from the surrounding trees and bushes. Thus they find little work necessary.

On either side of the tropical forest there is a belt where the temperature is always high, but where the rainfall 2. In the varies with the season. Here savannas abundant rain falls in one season, while the climate is very dry in the opposite season (p. 214). Owing to the lack of rain during one season, dense forests are impossible; but some plants, such as grasses, thrive. These are therefore grass-covered lands, and are known as savannas.

The downs of northern Australia, the park lands lying both north and south of the equator in Africa the campos of Brazil, and the llanos of Venezuela and Colombia, are all examples of savannas. They are dry and barren in one season, fresh and green in the other. Trees, such as palms, line the streams; but elsewhere the land is open prairie. Plant-eating animals roam about; in Africa, for example, the antelope, gazelle, zebra, giraffe, buffalo, elephant, and

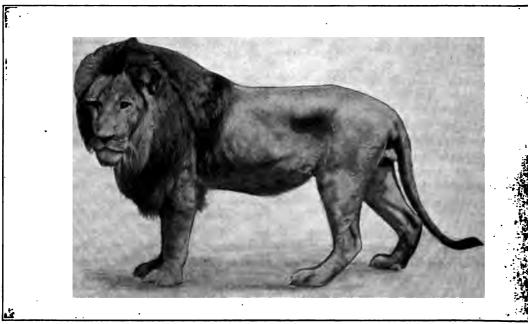


Fig. 321. — The lion, sometimes called the king of animals.

ss. In addition, there are some ng animals, such as the lion 1).

tropical forests are suited only ife of indolent savages, the open invite human inhabitants, in the heat. They also compel inecause men must make provision period of drought. Therefore, se African negroes who inhabit I lands keep flocks and carry on ns of agriculture. Where settled men, these savannas are to-day razing lands.

savannas grade into tropical on the side next to the desert equator, but they gradually change into on the other side. Locate

leserts in Australia south of the ; in Asia north of the equator; Africa and America on both sides quator (Figs. 296, 298, 299 and 300). Ithe causes of their arid climate.

desert there are vast areas in which the rifted before the wind and piled into sand and dunes (Fig. 322). There are also tracts g with salt where the water of lakes has ad and left salt upon the surface. Parts esert are broad plains; but there are also teaus, deep valleys, and mountain ranges.



Fig. 322. — Sand dunes on the edge of an oasis in the Sahara desert.

Throughout most of the desert there is such a lack of rain that the surface is barren and desolate at all times.

Even in such a region, however, plants and animals are not entirely lacking. In some sections there are scattered clumps of coarse grass; and there are prickly plants, like the cactus, in which the leaves and stems are as compact as possible to prevent evaporation. In place of a dense tropical foliage, like that of the tropical forest, there is a notable absence of leaves. Indeed, a large part of the plant is under ground. This is because the roots must struggle hard to find the necessary moisture, and the portion above ground must use

as little moisture as possible, and waste none; for years may pass before rain comes.

That the desert soil is usually fertile is proved by the fact that vegetation thrives wherever there is fresh water, as along a stream. Such watered spots in the desert are called oases. They make beautiful gardens in the midst of the barren desert.

One of the few large animals native to the deserts of the Old World is the ostrich. Another, much used by man, is the camel (Fig. 323). The camel well illustrates how animals become adapted to their surroundings. Each foot has a broad sole which aids the camel in

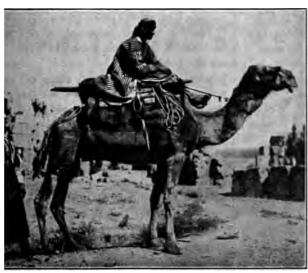


Fig. 323. - A camel on the desert of northern Africa.

traveling by preventing the feet from sinking into the sand. The nostrils can be closed when necessary, and the eyes are protected by thick lashes. Both of these devices help to keep out the sand, which is so often blown about. The camel is further provided with pouches in which enough water may be stored to serve its needs for two or three days. It also has a fatty hump, which furnishes nourishment to the body, so that the camel can go without food longer than most other animals.

Human beings naturally shun the desert. Permanent homes can exist only on the oases (Fig. 322); but wandering tribes, or



Fig. 324.— A family of nomads and their tent on the Sahara desert in Morocco.

nomads, roam about over the desert. They live in tents (Fig. 324), and are engaged either in herding, or in driving caravans of camels laden with articles of trade.

What part of North America is included within the north temperate zone? What Life in the part of the Old World? temperate What countries of South zones America are at least partly included within the south temperate zone? What part of Africa? Of Australia?

The land of the temperate zones is in large part forest-covered. Thus a broad

1. In the well—forest belt crosses the northwatered secern interiors of both North

America and Eurasia. Owing
to the moderate rainfall in some parts, and
to the rigor of the climate in others, the

forest is more open than in the tropic zone.

In the forests near the torrid zone, the trees are for the most part tropical in kin In the cooler parts, however, they a mainly of two sorts: (1) the evergreens, is cluding the pine, spruce, and hemloc which have needle-like leaves that remangreen throughout the winter; and (2) the deciduous trees, like the oak, maple, ela and chestnut, whose leaves are much large but fall when frost comes. The temperanger forest was the home of many wild animal

but these have now been great reduced in number. Nan some of those of North Ameri (p. 17). Owing to the col ness of the climate in the nort ern sections, these animals a protected by fur, which me find of much use.

There are some treele plains even in those parts the temperate zone where the rainfall is heavy enough for tree growth. Examples these are the *prairies* in the United States and some of the plains in southern Russi What has been said about the

cause of prairies (p. 19)?

In the temperate zones of the northe and southern hemisphere both the clear forest lands and the humid, grass-cover plains have become the seats of extensi agriculture. In fact, the temperate zon are the agricultural regions of the worl and they might almost be called the zones grain (Figs. 535, 536). Make a list of the grains that are cultivated; also of the fruit

It is in the temperate zones, too, whe man has developed most highly. The sir ple life of the savage in the tropical force and of the Eskimo in the cold regions, offe a striking contrast to the varied life the agricultural people in the tempera belt. Not only are the latter more high civilized, but they have so increased i



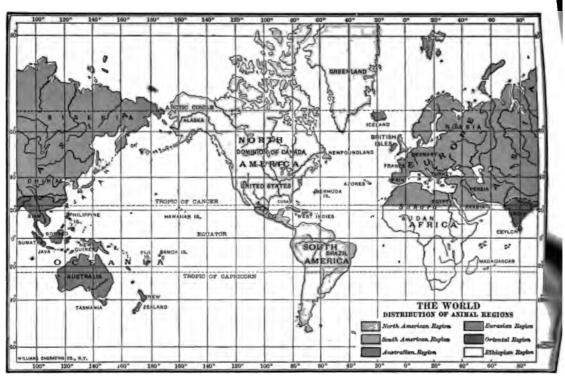


FIG. 325.

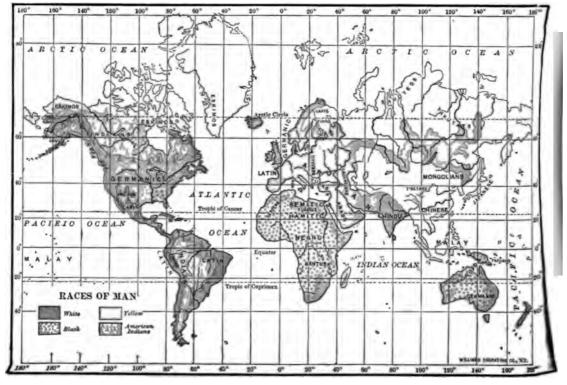


FIG. 328.

negroes.

imbers that the temperate zone is the ost densely populated belt in the world. iggest some reasons for this.

In addition to the prairies there are her treeless, grass-covered lands in the temperate belts. These are usually in the interior of conients, on the border of the deserts, where e rainfall is light. In the Old World,

here these arid tracts are called ppes, there is a broad strip of eeless land extending from southstern Europe to central Asia. he Great Plains of western North merica, and the treeless plains, r pampas, of Argentina are also teppes (Fig. 346).

On these steppes the melting snow nd the spring rains cause the grass to e green in spring and early summer; out drought then changes it to gray nd yellow. There are no trees xcepting along the streams; and here is too little rainfall for agriulture without irrigation.

The wild animals are mainly grass eaters. Formerly the steppes upported great herds of deer, intelope, and bison; but cattle, sheep, horses, and camels have now largely taken their place. In the Old World the inhabtants of the steppes have for many centuries led a pastoral ife, and have become nomads. They wander about, living in ents during the summer; out in winter they build nore permanent homes for he sake of protection against he weather.

The kinds of plants and animals are not he same in different sections of the world. Istribution of Thus, the native animals and timals and plants of Australia are quite lants different from those of Asia or merica. There are several reasons why hey do not naturally spread all over the arth. One of the most important of these 3 that the ocean is in the way. It is a arrier that they cannot easily cross. Mountains and deserts are other barriers. Thus, lands that are separated by such barriers are quite apt to have different kinds of animals and plants; while lands that are connected, or that were formerly connected, have animals (fauna) and plants (flora) more nearly alike. The map (Fig. 325) shows the different zones of animal life in the world. What are their names?

2. Peoples

Man, like plants and animals, varies in different parts of the world. He is influenced by his surroundings, as they are, and in the course of time has developed differently in the various lands of the earth. People hold different views about the origin of the human race and its divisions, but mankind in general may be divided into the four great groups described below.

> All together there are over one and one half billion human beings upon the Principal diviearth, or nearly sions of mantwenty times the kind

in 1. Ethiopians number the United States. these, over one hundred and eighty-five million are negroes (Figs. 826 and 327), or Ethiopians. This is often called the black race. There are many divisions of this Fig. 327.—A Zulu, one of the tribes of African group, but they all have

a deep brown or black skin; short, black, woolly hair; broad, flat noses; and prominent cheek bones.

The home of the Ethiopians is Africa, south of the Sahara Desert (Fig. 326), though many have been carried to other lands as slaves, and have there mingled more or less with the other races. The negroes in Africa are either savages, or barbarians of low type; but in other lands they have often advanced to a civilized state.

The native Australians (Fig. 523), the Papuans of New Guinea, the Negritos of the Philippines, and the blacks on some other islands in that part of the world, resemble the negroes most closely, though differing from them in some important respects. They are shorter; their hair is less woolly, their noses straighter, and their lips less thick.

A second great division of the human race is that of the American Indians, often 2. American called the red race (pp. 22-24). Indians It is the smallest of the four groups, numbering only about fifteen

Photograph from Bureau of Ethnology.

Fig. 328. — A North American Indian, one of the red race.

million. These people, who in some respects resemble the Mongolians, were in possession of both North and South America when Columbus discovered the New World. They are distinguished by

a copper-colored skin, prominent cheek bones, black eyes, and long, coarse, black hair (Figs. 326 and 328).

The third division, the Mongolian, or yellow race, numbers about six hundred and thirty million. They are mainly Asiatic people, though some, like the Finns, Lapps, and Turks—have migrated to Europe.

The Mongolians, as represented by the

Chinese and Japanese (Figs __326 and 330), have a yellowish, or in some cases even a white, skin, prominent cheek bones, small oblique eyes, a small nose, and long, coarse, black hair. The Malays are a divides ion of the yellow race. The great majority of Mongolians are civilized, although their kind of civilization differs from that of the white race.

By far the largest and most civilized of the four divisions of mankind is the white, or Caucasian, race, which numbers about six hundred and ninety million. They are also the most widely scattered, being found now in great numbers on all the continents. Their original home is not known.

While they differ great from one another, two main branches are recognized (1) the fair type, with floricomplexion, light brown, flaxen, or red hair, blue or gray eyes, and height above the average; (2) the dark type, with fair skin, dark

brown or black hair, often wavy or curl, and black eyes.

The leaders among these races are the ewhites, who, having learned the use ships in exploring distant lands, have

read with great rapidity. Being more vanced than the other races, the white

tent to ians are ders, with

race has conquered the weaker ich the Cau- people and taken their lands from them, so that now they rule almost the whole world (Fig. 326). The only divi-

in that has held out against them is that the Mongolians, whose very numbers ve in large measure served to protect em.

Every race has some form of religion. mong ignorant savages it is little more than superstition. They are surrounded by nature, which don, and sir distributhey do not understand. They

seek a cause and, seeing none, Superstition are led to believe in spirits. me of these are supposed to be evil,

others good. Believing that these spirits have great influence over their lives, they try to win favor with them by offering sacrifices and worshiping them.

Such religion - if it may be so called - takes many forms. Some races believe in witchcraft; and among them the witch doctor is sometimes more powerful than the ruler himself. To ward off evil influences, charms are worn, curious rites are observed, and images or other objects, called fetishes (Fig. 328), are worshiped because they are believed to possess some magic power. Among these objects are included fire, the sun, the earthquake, and many animals. They have little or no idea of God.

All people with some such views as these are often said to have no religion. From our point of view they have no true

ligion: but they have something related to it.

Among the civilized races there are rms of belief in which the idea of God much higher, and in which the doc-

trine of future reward and punishment is taught. Of these religions five call for special mention.

Buddhism, followed especially in eastern Asia (Fig. 332), was established in India five or six hundred years be- 2. Buddhism fore the time of Christ. It was the result of the work and teachings



Fig. 330. — Japanese women, belonging to the Mongolian or yellow race.

of Buddha (Fig. 331). There are many differences in the religious beliefs and customs of the people who follow Buddha, and in consequence there are many sects.

Brahmanism is one of the most common forms of belief in India and other parts of It would be difficult 3. Brahmanism Asia. to correctly describe the religions of the Asiatic people in a few words; but idolatry, or the worship of idols, is common among them. Ancestor worship is common in China; and the doctrine of caste in India, — that is, the doctrine of class dis-



Mankind. 329. - A negro tish from Africa.



Fig. 331. — A great statue of Buddha.

tinction. Both of these doctrines, which are a part of their religion, are opposed to

progress, as you will learn later (pp. 355 and 363).

The Jewish religion, still followed by large numbers of people, upholds the worship of one righteous God as 4. The Jewish taught in the Old Testament; religion but they reject the New Testament.

The prophet Mohammed lived about six centuries after Christ, and the Koran contains his teachings. Moham-5. Mohammedans deny that Christ was danism divine. This religion has spread by the sword with wonderful rapidity, especially among the half-civilized people of Asia and Africa (Fig. 332). Many of its followers became fanatics who, believing that they thus obtained future happiness, willingly died if they could die killing a Christian.

The Christian religion, the common belief in America and most of Europe, has spread far and wide, until it now 6. Christianity. numbers nearly four hundred and its value and eighty million followers. Its success, however, must not be measured by numbers alone; for nearly all of the most civilized

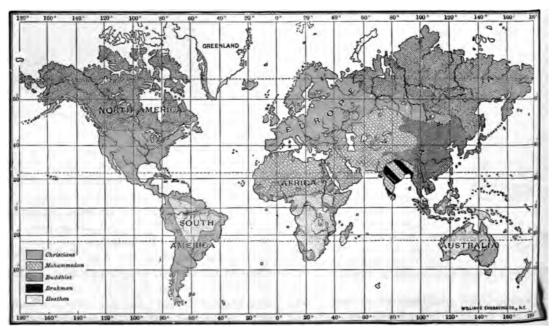


Fig. 332. — Map of religions of the world.

nations of the world are Christian nations (Fig. 332). It is no accident that this is so, for Christianity has been one of the chief factors in making civilization possible.

Religious belief has had much to do with inventions and the growth of industry. The Chinese, for example, have long opposed new inventions because their ancestor worship led them to have too much reverence for past customs. Partly for such reasons, our study of geography is chiefly concerned with Christian countries; for there it is that we find the most varied and extensive uses of the earth in the service of man.

1. What are the conditions of plant and animal life in the frigid zone? 2. In the rainy portion of the torrid zone? 3. In the savannas? 4. In the desert portions of the torrid zone? 5. In the well-watered

portions of the temperate zones? 6. In the arid lands of the temperate zones? 7. What about the distribution of animals and plants? 8. Tell what you can about the Ethiopiaus; their characteristics and distribution. 9. Do the same for the American Indians. 10. Mongolians. 11. Caucasians. 12. To what extent are the Caucasians leaders among these races? Give reasons. 13. Name the principal forms of religion. 14. Give some facts about religious superstition. 15. Buddhism and Brahmanism. 16. Jewish religion. 17. Mohammedanism. 18. Christianity.

Make a collection of different kinds of wood.
 Notice how some of them are polished for use as furniture.
 Visit a museum to see specimens of tropical animals.

4. Examine a cactus closely. 5. Examine and compare the foliage of some evergreens and deciduous trees. 6. Collect pictures of animals belonging to different parts of the world. 7. How many of the four divisions of mankind are represented in your own neighborhood? 8. Collect pictures for the school, showing the kinds of dress worn by the different races of mankind.

PART III. SOUTH AMERICA

In what zones does South America lie? 2. What climate would you expect in the northern part? In the central part? In the southern part? 3. During what months does winter come in the extreme south? 4. What large rivers drain the continent? 5. Do you find many lakes? Suggest a reason. 6. To what extent is the coast line irregular? 7. Draw an outline map and locate upon it the mountains and rivers. Add the boundary lines of the principal countries. 8. Where are most of the islands? 9. Find Cape Horn. It is south of what island? What strait separates this island from the mainland? 10. Which country has most railways? What does this indicate about the people there? 11. In what zone is that country? How may the climate there have influenced the building of railways?

I. GENERAL FACTS

Recall the shape of North America. cate its two main highland Surface What are their masses. features Which is the higher names? 1. Resemblance and more extensive? What between North and South about its volcanoes? Where America are its principal plains?

As you can see from the map, South America is quite like North America in its surface features. South America, like North America, is triangular in shape, being broad at the north and tapering toward the south. Its principal highlands are on the two sides, as in North America (Fig. 10). The western highlands, called the Andes (Fig. 334), form one of the loftiest mountain systems in the world; and between the ranges are many deep valleys and some lofty plateaus, as in our western Cordillera. From the northern to the southern end of South America, those mountains rise from the very seacoast, and extend far inland.

Many of the highest peaks are volcanic cones, one of them, Aconcagua, in Argentina, reaching an elevation of nearly twenty-three thousand feet. This is one of the loftiest peaks in the world. Several of the volcanoes are still active, and some of the eruptions have been terribly violent. Earthquakes, too, are frequently felt in this region.

The most extensive highlands on the eastern side of South America are in eastern Brazil (Fig. 334). Like New England, this is a region of high hills and low mountains. The highest point is a little over ten thousand feet above sea level. The Guiana highland (Fig. 334), between the Amazon and Orinoco rivers, resembles the upland of Brazil, but is separated from it by the Amazon Valley. The remainder of the continent is lowland (Fig. 335), and mainly a vast plain, extending from southern Argentina to the Caribbean Sea.

Although the surface features of the twocontinents are so much alike, there are twoimportant differences. In the
first place, their large rivers
flow in different directions
from those of our continent.

Differences
between Herth
America

Describe the three principal river systems of North America (Fig. 9). Make sketch of the three largest rivers of South America. One of these is the largest in the world. Which is it? Which one most nearly corresponds to the Mississippi in position and direction of flow?

A second important difference between the two continents is found in the coast lines. It will be remembered that much of the North American coast has been made irregular by the sinking of the land. Thus many good harbors have been formed. Much of the South American coast, on the

..



The boundary of Ecuador is in dispute.

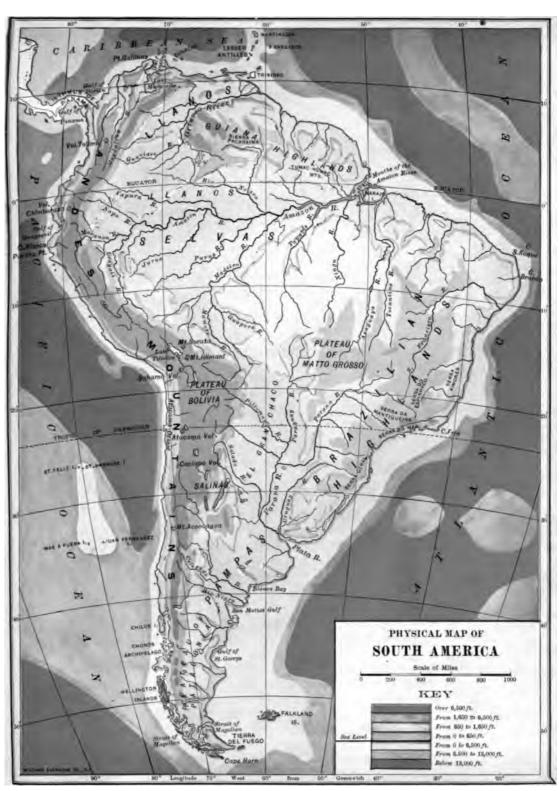


FIG. 334.

.



other hand, has been rising. This has made the coast line straight, because the raised sea bottom is so level. The western coast of South America is the most regular coast, of long extent, in the world. For a distance of three thousand miles there are very few good natural harbors. What

Fig. 336. - A view in the lofty snow-covered Andes.

effect must this have upon the development of the continent?

What portion of South America has a tropical climate? How do you know? Climate Where does the Tropic of 1. Temperature Capricorn cross the continent? What countries of South America are partly or wholly in the temperate zone? During what months do they have summer? What effect on temperature are their north winds likely to have? What part of South America has a climate much like that of the United States?

The winds, together with the highlands, are the key to the rainfall. On the map 8. Rainfall (Fig. 294) it is seen that the (1) The winds belt of calms extends across the continent in the neighborhood of the equator. North of this belt the northeast

trade winds blow (Fig. 294), while south of it is the zone of southeast trade winds. Still farther south are the horse latitudes, and then come the prevailing westerlies (Fig. 293), which blow across the southern end of the continent.

As one would expect, there is heavy rain-

fall (Fig. 296) in the belt of calms. The calms. The northern coast in the tropical must also re-zone east of the mountains

rains, because the trade winds
blow from the ocean and are
forced to rise in passing over
the slopes. The highlands of
eastern Brazil must likewise
be well watered by the vapor
laden southeast trades (Fig.—
296). The trade winds lose
much of their moisture in
traveling across the continent,
but on approaching the Andes
they are forced to a still
greater height. Accordingly,
the eastern side of this range
is wet by frequent rains.

You have learned (p. 214) that the belts of rainfall shift northward

and southward, each year, as the season changes (Figs. 294 and 295). Therefore, there is a belt, on each side of the equator, where the land is dry at one time of year and well watered in the opposite season. These belts of grass lands, or savannas (p. 228), lie on both sides of the equatorial forest. They are called *llanos* in the Orinoco Valley, and campos in Brazil.

South of the belt of calms, in Peru and northern Chile (Fig. 296), the western slopes and valleys of the Andes are far too arid for agriculture cal zone west of without irrigation, and some the mountains portions are true deserts (Fig. 337). This region is arid because the Andes Mountains prevent the trade winds from reaching it. Here the prevailing winds blow from the south; that is, parallel to the coast. For this reason they have little vapor; and since they are blowing to-

he equator, and therefore becoming r, they do not give up their mois-Thus there are deserts even on the ast.

evailing westerlies is south felt. In this szone part of the contherefore, it is the side that receives the hile the eastern part (p. 212). In rising he land these west from the ocean, cause nt rainfall in central outhern Chile; but, robbed of their vapor r cross the mountains, escend as dry winds the plains of Argen-With what portion of

1 Argentina be compared?

the above we see that, while most

humidity and high temperature favor luxuriant plant life (Fig. Plant and 338). So dense are the vast animal life jungles of the Amazon that 1. Plant life her south, in Chile, the influence of | travel through them is almost impossible



Fig. 337. - A view in the desert of Bolivia in the Andes. The animals

nited States may the climate of | (p. 243), and immense areas have never been explored. In the desert of the west coast, on the other hand, plant life is very th America is well supplied with | scanty (Fig. 337). There are some parts—

for instance, the Desert of Atacama in northern Chile — where there is almost no life of any kind.

In the south temperate zone, and on many of the mountain slopes of the torrid zone, where the climate is cool, and the rainfall moderate, the land is forestcovered; but these forests are much more open than the tropical jungle. extreme southern part of the continent has a climate so cold that the plants become dwarfed, as in northern Canada.



Fig. 338. - A view in the dense jungle of South America.

vo extensive areas, on opposite sides Andes, are arid. Locate them 199).

In the tropical forest are many insects and beautiful birds. Among the larger animals may be mentioned the fruitthe warm, rainy belt the great eating monkey, the fierce jaguar (1) In the field fungle (Fig. 339), which preys upon other

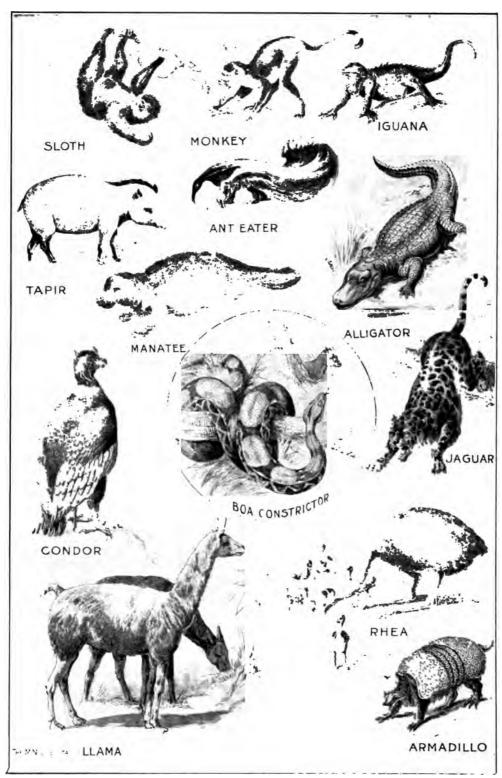


Fig. 339. -- Some of the South American animals.

nimals, and the sloth (Fig. 339), a creature which leeps suspended, back downward, from the branches of the trees. There are also many reptiles, including expents and the iguana, a tree lizard which grows on a length of several feet. Some of the serpents are small and poisonous; others, like the boa contrictor (Fig. 339), are large, and powerful enough on crush a deer in their coils.

The many beautiful butterflies and the ants are specially interesting. The termites, commonly alled white ants, live in colonies, and build houses of earth. With so many insects there are, naturally, numerous kinds of insect eaters. One of the most occuliar of these is the ant-eater (Fig. 339). With ts long claws it digs the ants from their earthy or woody dwelling places, while its sharp-pointed snout and long tongue aid in finding and devouring its lood.

The tapir (Fig. 339), a large animal five or six set in length, wanders about at night, feeding along he water courses. The armadillo (Fig. 339), a burowing animal covered with an armor, rolls itself nto a ball when attacked by an enemy, thus proecting its soft under parts. In the river waters and swamps are fishes, turtles, and alligators (Fig. 39). The fish and the turtle eggs are among the hief foods of the forest Indians. The manatee Fig. 339), or sea cow, lives in both fresh and salt rater, and ascends the Amazon even as far as caudor.

On the grassy plains herds of deer roam about, and also the rhea (Fig. 339), — often called the American ostrich, — one of the few large running birds. It lives on the open plains, as in Patagonia, where herds of guanaco, a ind of wild llama, are also found.

Among the crags and peaks of the Andes, dwells he condor (Fig. 339), the largest of flying birds,— large that it kills and carries off small deer. In he mountain valleys live the llama (Fig. 339) and wo related species, the vicuna and alpaca, both rild and domesticated (Figs. 337 and 353). Like ther mountain dwellers, the llama is so sure-footed in the rocks that it is of great use as a beast of urden; and the cold climate causes it to have a hick coat of wool which is of value to man. Beause of its usefulness the llama is sometimes called he American camel.

When South America was discovered by The inhabtents
Columbus, it was inhabited only by red men. Many of these were savages; and even to-day some of the forest Indians are savages living almost lolely upon fish, game, and the abundant

fruits. It is unsafe for white men to go among some of them, and indeed there are forest tribes which are still cannibals.

The red men whom the early explorers found along the eastern coast and some of the larger rivers, were in the lower stages of barbarism like most of the North Amer-



Fig. 340. — Savage Indians who live in the tropical forest of eastern Peru, east of the Andes.

with the white settlers and adopted their customs.

Among the Andes, especially in Peru, Bolivia, and Ecuador, the Spanish explorers found tribes of Indians, called Incas, who had developed far beyond their neighbors. Indeed, like the Pueblo and Aztec Indians of North America (p. 23), they had reached the early stages of civilization. Such advance was favored by the temperate climate of their mountain valley homes, and by the arid



Fig. 341. — A stone bridge in Bolivia, built by the Incas before South America was discovered by white men.

country and the mountain barriers, which served to protect them from the inroads of their more savage neighbors.

By the aid of irrigation the Incas tilled the soil, cultivating the potato, corn, and Peruvian cotton, all of which they had improved from wild plants. They domesticated the llama and alpaca for their wool, and for use as work animals. They organized armies, built roads (Fig. 341), and had a rude postal and express system by swift runners. Although they had not invented writing, they kept records by means of knotted strings. Their empire, which extended for more than two thousand miles along the Andes, and from the Pacific coast to the trackless forests of the Amazon, was governed by a powerful chief whose capital was Cuzco in Peru. The stage of advancement reached by these red men was wonderful.

The Spaniards, attracted by the discovery of rich deposits of gold and silver, seized almost all of South America, except Brazil, which was settled by the Portuguese. They treated the natives with great cruelty, especially the Incas, whom they robbed of their treasures and reduced to slavery.

As in North America, the Spaniards intermarried freely with the Indians, so that the present inhabitants of South America are, to a large extent, of mixed blood. The introduction of negro slaves has led to a still greater mixture of peoples. Therefore, while there are still pure-blooded Indians and negroes, and also pure-blooded white men especially Spanish and Portuguese, the greater number of the South Americans are mixture of two or more of these very different races.

Of late there have been man wimmigrants from European courtries, especially from Germany and southern Europe.

They have gone mainly to southern Brazil, Argentina, and Chile, and have helped greatly in the development of these countries.

Spain maintained her control in South America for fully three hun-dred years. In the early part of the nineteenth century, however, the



Fig. 342.

BRAZIL 248

they fought for independence. successful and formed independence. successful and formed independence. razil also became independent of and, after being for a long time an emperor, established a republic of government in 1889. Every South America is now an independence of government in the successful and successful and

II. BRAZIL

the largest country in South It is even larger than the United States without Alaska, and nearly as large as the whole. While extending north of the n one side, it reaches into the perate zone on the other. How rees of latitude does it include?

large a part of Brazil is on the eastern slope of the continent, in the torrid zone, its climate ly warm, but moist. Why the g. 296)?

Brazil is a highland region.

streams drain this upland in
various directions. Point out
some of them (Fig. 334).

he name of the largest river not
to the Amazon?

rthern third of Brazil is mainly el plain, drained by the Amazon he rainfall in the Amazon Valley ry, and the slope of the land so at the river and its larger tribuswollen to great breadth. At lood these rivers overflow the surcountry and change it to an imamp crossed by many channels. laces the Amazon is several miles I resembles a lake rather than a

nazon is navigable for steamboats the base of the Andes, a distance

of twenty-two hundred miles from the seacoast. Some of the tributaries also are navigable. Along this water Navigation on way there are a few small the rivers settlements, such as MAÑAOS, which are reached by ocean steamers; but away from the river there is nothing but an almost unknown wilderness.

The Amazon forest is a good type of the tropical forest, where plants, encouraged by the heat and dampness, grow The tropical luxuriantly in the rich soil. forest Not only is the rainfall heavy, 1. Its appearant but evaporation is checked by the dense vegetation, so that the forest reeks



Fig. 343.—Cutting a road in the dense tropical forest of the Amazon Valley. Notice the wavy vines hanging from the trees.

with moisture. Therefore, at night, when the temperature falls, such heavy dews collect that the plants are wet, as by a rain.

In these woods there is an occasional giant tree reaching to a height of from one hundred and eighty to two hundred feet, and with a circumference of from twenty to forty feet. The lower limbs may be as much as a hundred feet from the

ground. Between these giant trees are smaller ones struggling to rise out of the somber shade into the sunlight. There are also many shrubs, bushes, ferns, and vines, the latter twining about the tree trunks or hanging from the lower limbs (Fig. 343).

The woods present much the same appearance throughout the year. There is no time when all the trees send forth their leaves and blossoms; nor is there a time when all the leaves change color and fall to the ground. Some of the trees blossom throughout the year; others have their blossoms at regular seasons; thus flowers and fruits may be seen at all times of the year.

In such a forest there is dense gloom and silence, broken now and then by the crash



Ratsel's History of Mankind.

Fig. 344.—Savage Indians who live in the interior of Brazil, far away from the region where white men live.

of a falling tree, or the sorrowful notes of birds, or the howling of monkeys, or perchance the shrill scream of an animal which has fallen a prey to the boa.

Some of the trees of the forest produce fruits and nuts, others valuable timber or

2. Its products
(1) Fruits,
nuts, dyewoods, and
vanilla

dyewoods. In fact, the word *Brazil* comes from the name of a dyewood found in the Amazon forests. Another valuable plant is the vanilla, whose

beans are of value in making perfumes and flavoring extracts. Many of the Indians

near the rivers make long journeys into the forest to collect the products, both for their own use and for shipment down the Amazon...

The Indians still cultivate the mandioca—which was one of their principal foods wherewhite men appeared. The root (2) Mandioca of this plant is somewhat like and yerba-mate—a long sweet potato, and a dish of dry meal—or farina, made from it is commonly seen of Brazilian tables. To these people mandioca—is, in a measure, what wheat is to those where live in temperate climates. It is from this plant that tapioca is made. The leaves of tropical plant called yerba-mate, or Paragua—tea, are also obtained in the Brazilian forest. Brazil produces far more of this tham Paraguay.

The natives are also engaged in obtaining rubber, a product of great importance because of its many uses. When gathering rubber, the natives encamp in the forest in lightly built huts from which paths lead through the dense undergrowth to the rubber trees. Holes are made in the trees, so that the sap oozes forth, when it is collected in bamboo dishes. It is then smoked and dried before being shipped down the river to PARA. Find this city on the map (Fig. 333).

Besides the trees in the forest, there are many rubber plantations in which the rubber tree is carefully planted and cultivated. Rubber ranks second among the exports from Brazil, and one of the principal markets for it is the United States. What are some of its important uses?

The coffee tree is a native of Abyssinis in Africa. It was introduced into Brazil long ago, and has proved so Agriculture valuable that Brazil now pro- 1. Coffee duces more than one half of all the coffee used in the world. It is cultivated all the way from southern Brazil to the Amazon, and there are fully five hundred million coffee trees in that country. They grow best at altitudes of from fifteen hundred to forty-five hundred feet, and are therefore very common on the highlands of

eastern Brazil. Each tree produces from thirty to forty pounds of coffee a year. Between April and September the berries are picked, dried in the sun, and hulled by machinery.

After being sorted in the cities, the coffee is shipped in bags. Formerly most of the Brazilian coffee left the port of RIO DE JANEIRO; but now more than half of it is sent from SANTOS. Coffee is the prin-

cipal export of Brazil, and much of it comes to the United States.

Cotton, tobacco, sugar, fruit, and corn are also raised extensively 3. Other agricultural prodthe highlands of ucta Brazil. Much cocoa is cultivated in the tropical section, and in the extreme south many cattle are raised.

The rocks of the highlands produce some valuable minmining and erals, especially manufacturing gold and diamonds. Indeed, before diamonds were discovered in South Africa, Brazil was the

principal diamond-producing country in the world. Both coal and iron are also found, though they are not yet extensively mined.

Manufacturing has begun to be important in Brazil, which is one of the most progressive of the South American countries. Cotton manufacturing is rapidly increasing, and there are also woolen mills, flour mills, and other manufacturing plants, chiefly in southern Brazil. Why should this be the most progressive part of the country?

The capital and largest city of the Republic is RIO DE JANEIRO (Fig. 345), a city with a population of a million people, and the second in size in South America. It is situated upon a fine harbor and is surrounded by an

excellent farming country dotted with coffee plantations.

Several other Brazilian cities are seaports, connected with the interior by short railway lines which bring the coffee and other products for shipment. The most important are SÃO PAULO, BAHIA, and PERNAMBUCO, the chief port for the export of sugar and cotton, and SANTOS, the seaport of São Paulo.



Fig. 345. — A view of part of Rio de Janeiro.

III. ARGENTINA

This is the most advanced of South American countries. One reason for this is that Argentina extends from why the most just within the torrid zone to progressive the extreme southern end of country in South America. Thus the South America country is, for the most part, within the temperate zone, which has the climate most favorable to the development of energetic people.

Besides this, there are many different kinds of climate, arid in one part, rainy in another; tropical here, warm temperate there, and cool temperate elsewhere. Such a variety of climate makes it possible to raise a great variety of products.

A third reason for rapid progress is the

fact that much of the country consists of pampas (Fig. 346). These open, treeless plains have made it easy for settlers to

are produced; in the more temperate part, wherever the rainfall is sufficient, grains There is also much and alfalfa are raised. move about and to carry on the indus- fruit raising, especially grapes, from which

wine and raisins are made.

Wheat is the mos important agricultura_] product, for the humi part of the Argentin plains is one of th -e greatest wheat-produce cing sections of th world. The climate favorable, the soil fe tile, and the land level or gently rolling, as i =n our Red River Valley.

The extreme south __s too cold for farmin

but sheep raising is carried on even in Patagonia and on the stormy islands beyond the Straits o- f The arid, open plains are s-Magellan. well adapted to ranching, that there ar



Fig. 346. — A view on a cattle ranch in the pampas of Argentina.

tries of farming and ranching. The ease of settlement on these open plains contrasts strikingly with the unfavorable conditions in the dense tropical forest of the Amazon Valley, but may be compared with

the conditions on the plains and prairies of the United States.

There are, however, extensive forests in the north, and lofty mountains in the west, and because of these the industries of the country are even more varied.

favorable Such conditions have served to attract many immigrants from Europe, and there is, therefore, a larger proportion of pure-blooded whites here than in other countries of South America. Largely for this reason the government of

Argentina is better than that in most South American countries. That, alone, has had much to do with the progress of Argentina.

In many parts of Argentina the climate Agriculture and soil are favorable to agri-1. Parming culture. In the warm northern portion sugar cane, coffee, and tobacco



Fig. 347. - Indians living in the cold southern region on the Straits of Magellan.

many millions of sheep and cattle in this

There is some lumbering and mining in the mountainous portion. From the words Argentina and Plata, both of Lumbering which mean silver, one might and mining conclude that this is a great silver-produegion. This is not so, however, for names are due merely to the fact he natives wore silver ornaments. tina is not important as a mineraling region, though some gold, silver, , iron, coal, and petroleum are found. he large cities there are many ins, largely connected with the raw turing products of the country. The merce leading kinds are dairying and nufacture of wool, flour, sugar, wine, , and cotton. A large portion of w products, however, is sent abroad,

corn, and meat.

nery and many
manufactured
must still be
ed.

eountry so proe as this, it is l that there should ns of ready transon. The broad River, which s into the Plata y, forms an im-

t water way to the interior; and rs cross the well-settled portions of untry, connecting all the important

In fact, there are more railways han in any other South American y. In resources, industries, governand education, Argentina, of all the American countries, most closely less the United States.

ar the most important city is BUENOS. With over a million inhabitants, it is the largest city in South America, and one of the great of the world. It is growing rapidly a much manufacturing and commerce.

below Buenos Aires, on the Plata Estuary, is port of LA PLATA; and upstream, on the River, is the rapidly growing city of ROSARIO, s an important railway center as well as a rt. In the interior are a number of towns and mong which CORDOBA is one of the largest.

IV. URUGUAY AND PARAGUAY

Like so much of Argentina, this is a region of plains, and since a large part of the country is well watered, it is uruguay suited to the production of the same crops as northern Argentina. But there has been much less development in Uruguay than in Argentina. One reason is that it has been very badly governed, for a few men have often controlled the army and made and unmade presidents almost at will.



Fig. 348. — A ranch house on a cattle ranch in Uruguay.

In late years there has been great improvement, and agriculture is being extended,—such crops as wheat and other grains, tobacco, and fruits being important products. Cattle and sheep, are, however, of even greater importance.

The principal manufactured products and exports are those connected with cattle and sheep; namely, dried beef, corned beef, ox tongues, hides, tallow, horns, and wool. The capital and largest city is the seaport, MONTEVIDEO, on the Plata Estuary.

This little country, like Bolivia, is without a seacoast, though it is connected with the sea by the Parana River.

It is a region of hills and plains, partly covered with forests, but with much pasture land upon which large herds of cattle feed. The climate is hot and in many parts dry, with most of the hot winds from the north.

The agricultural products, besides cattle, are those of the warm temperate and tropical zones. These include tobacco, rice, sugar cane, and oranges. Rubber, dyewoods, and valuable timber are obtained from the forests. Another product is yerba-mate, or Paraguay tea. Although not used so extensively as our tea, which comes mainly from Asia, the Paraguay tea is very popular in South America, where its use was learned from the red men.

The capital, ASUNCION, is connected with Argentina, Uruguay, and the sea coast by rail.

V. THE GUIANAS AND VENEZUELA

North of Brazil are three small countries, the only portions of the South American continent now under control of European nations. They belong to Great Britain, Holland, and France, respectively, and are known as British Guiana, Dutch Guiana or Surinam, and French Guiana. Find the capital of each.

In these countries a large part of the surface is still a forest wilderness, inhabited chiefly by Indians. This tropical forest, like that of the Amazon, which it closely resembles, supplies rubber and valuable timber; but its resources are only slightly developed. Near the coast there is a strip of cultivated land on which sugar cane, bananas, cotton, and a few other products are raised. Of late, especially in Dutch Guiana, attention has been turned to the production of cocoa and coffee. Some gold is found in each of the Guianas. The Guianas have but one short railway, and in most sections there are almost no roads. There are scarcely any exports except sugar, molasses, and rum—all made from sugar cane.

This name, which means "little Venice,"

Venezuela

1. Character of country, and products

was given in 1499 because the explorers found an Indian village built on piles, or posts, in the water along the shore of Lake Maracaibo.

Venezuela includes one of the spurs of the Andes, and also a portion of the Guiana highland; but a large part of the country is occupied by the broad plains of the Orinocource Valley. Some of these plains, the treeless llanos (p. 228), are the seat of extensive cattle raising, as is the case on the pampas of Argentina. There is some farming. Hardy crops, like potatoes, beans, and barley, are raised even at altitudes of eight thousand feet; but below five thousand feet are found such semitropical and tropical products as sugar cane, bananas, cocoa, and coffee. Coffee is the chief export; included, Venezuela is one of the leading coffee producing sections of South America.

In parts of Venezuela there are vast for—ests which produce valuable dyewoods and rubber; and among the mountains are richmineral deposits, especially gold.

The capital, CARACAS, five or six mile from the sea, is situated upon a plateau, over three thousand feet above sea level. It is connected withits seaports by a short railway.

In 1812 Caracas was visited by one of the most terrible earthquakes ever recorded. It being Ascension Day, a great part of the population, which is Catholic, was at church. The first shock caused the bell to toll; but after all danger was thought to be past, there came a terrible noise from underground, resembling the rolling of thunder, though louder and longer. Then followed a shaking of the earth, so tremendous that churches and houses were overthrown, and the inhabitants were buried beneath their ruins. On that day fully twelve thousand persons perished.

VI. TROPICAL ANDEAN COUNTRIES

These countries — Colombia, Ecuador, Peru, and Bolivia — are all crossed by the lofty Andes, and are therefore Resemblances very mountainous. Each of to one another them extends eastward, beyond 1. In surface the mountains, to the plains of the upper Amazon and Orinoco valleys. The headwaters of the Amazon and its tributaries, in the region of the equator, have never been fully explored, and for that reason the exact boundaries of these countries of this section have been in dispute.

In such a mountainous country, there is, of course, great variety of climate. Tropical heat prevails throughout the lowlands (Fig. 349); but farm products on the mountain slopes there are temperate and even frigid climates.

The farm products vary accordingly. Up to an elevation of three thousand to four thousand feet, bananas, sugar cane, cocoa, and other plants of hot

climates flourish. Above this, to an elevation of six or seven thousand feet, tobacco, corn, and coffee are cultivated. From this height up to about ten thousand feet, wheat and our Northern vegetables and fruits do well; but above ten thousand feet the bleak mountain peaks are too cold for farming.

There is a great difference in the rainfall, as well as in temperature. Near the equator the rainfall is heavy; but in southern Peru, which lies in the belt of the southeast trade winds (p. 212), the climate is arid. On this account the tropical forest gradually dwindles toward the south, being replaced first by arid plains, and then by deserts.

The fact that this section is so mountainous explains its 3. In abundance importance as a of minerals mineral region. Gold and silver ores, and Other minerals as well, are found from the northern to the southern limit of the Andes, and this is one of the great mineral-producing regions of the world.

None of the capitals of the Andean countries are on the coast, and several are in the interior at a considerable election above sea level. Find examples. In choosing such sites the inhabitants have had the example set them both by their Spanish ancestors and by the Incas; for Cuzco, the capital of the Incas, and Madrid, the Spanish capital, are both at a considerable elevation above sea level, and many miles from the coast. The principal objects in the selection of such sites were

to be near the mines, to secure a cooler and more healthful climate, and to obtain protection from attack by sea. Doubtless the absence of good harbors (p. 238) was another reason why these capitals were not located on the coast.

It has been very difficult to carry on a republican government in these countries, where a large part of 5. Government



Fig. 349. — Tropical foliage on the lowlands of Ecuador near the coast.

the population can neither read nor write, and where there are so many Indians and half-breeds. In each of them ambitious leaders, usually generals in the army, have again and again overturned the government. This has greatly interfered with the development of industry and commerce; for neither life nor property has been safe. It has also prevented settlers from coming. Of late, however, there has been great improvement.

Colombia, named after Columbus, has seacoast on both oceans. The western part



Fig. 350. — A village in Panama.

is very mountainous, for several of the Andean ranges terminate there. Much mineral is found here, gold and silver being most important, though emeralds of excellent grade are also obtained.

In the eastern portion, on the other hand,

are treeless llanos on which large numbers of cattle are raised, as in Venezuela—Coffee is the principal farm product and the chief export—but sugar cane, tobacco, and cocoa are also produced. On the mountain slopes the grains fruits, and vegetables of temperate climates are grown.

BOGOTA, the capital and I largest city, is situated far in the interior, at an elevation of about a mile and a half above sea level. It has an agreeable climate, even though within the tropical zone.

The small republic of Panama was formerly a part of Colombia, but it revolted and became an independent country a few years ago.

What have you learned about it (p. 177) What can you tell about the Panama Canazone (p. 154)?



Fig. 351. - A house in Ecuador raised above the ground because of the dampness.

Why should Ecuador, the Spanish word for equator, be given to this country? In the Andes of Ecuador there are many volcanoes, including Cotopaxi, the loftiest active volcano in the world, and Chimborazo, which is still higher, though no longer active. Describe the climate (p. 212).

The principal occupations are farming and cattle raising. The chief farm products are wheat and barley on the highlands, and coffee, sugar cane, and cocoa on the lowlands. Cocoa is the most important product of Ecuador, and fully one sixth of all that is produced in the world comes from here.

The cocoa tree, which grows in the shade of the larger forest trees, has small pink and yellow blossoms which spring directly from the main trunk and branches. Its leaves are always green and it blossoms throughout the year. From each blossom there develops a golden-colored pod, several inches in length, inclosing a number of seeds, or beans, which are about the size of a large almond. After being washed, dried, and roasted, the beans are ready to be made into cocoa and chocolate. What are some of their uses? By what routes might they be shipped from Guayaquil to New York?

Another product of Ecuador, and of some other South American countries, is sarsaparilla. The rubber industry is also well developed.

There is an almost total absence of roads in this country, making the transportation of heavy machinery very difficult. This fact interferes greatly with mining among the mountains. Therefore, although there are known to be many minerals, there is little mining except of the richest gold deposits. There is almost no manufacturing in the country.

GUAYAQUIL, the seaport and the westernmost of the large cities of South America, is first in size. It is in W. Long. 80°. Does it lie east or west of Washington, D.C.? Quiro, the capital and the second city in size, is situated among the mountains of the interior at an elevation of about nine thousand feet.

There is abundant rainfall in northern Peru and on the eastern side of the Andes;

but in southern Peru the climate is arid and there are deserts (Fig. 296). Recall the cause of this arid climate Peru (p. 212). So little rain falls 1. Climate in southwestern Peru that in some parts, even close by the sea, there is an average of but one shower in seven years.

Peru was one of the most valuable sources of gold and silver for the Spanish conquerors. The Incas, who dwelt there, had collected gold

for ornaments, and this the Spaniards seized. Then, opening mines, they forced the In. dians to work in them as slaves. Since that time vast quantities of gold and silver have been obtained in this country; and valuable deposits of coal, petroleum, and copper have also been found.

There is much agriculture in Peru, the principal crops being corn, wheat, and potatoes among



Fig. 352 — An Inca Indian of Peru.

the mountains, and sugar cane, cotton, tobacco, cocoa, and coffee in the lower and warmer sections. Even in the desert portion there is some farming by irrigation, as in southern California. Large numbers of sheep and cattle are raised, and also the llama and alpaca for their wool (Fig. 353).

An unusual product is coca, from which cocaine is made; and another is cinchona, or Peruvian bark, from which quinine is made. These plants were cultivated by



Fig. 353. - The South American llama.

the Incas before the coming of the Spaniards.

There is some manufacturing in Peru, especially of sugar and cotton goods. One great difficulty,

4. Manufacturing and transportation however, has been that of transportation. The rugged Andes extend the entire length of the country, separating the Pacific coast from the

broad, forest-covered plains of eastern Peru. To overcome this difficulty, the Peruvians have built several railways, one of which deserves special mention. Beginning at CALLAO this line passes through Lima; then it climbs the mountains, crossing deep gorges, by means of high trestles, winding about on the very edge of precipices, tunneling through the

mountain rock, and finally crossing the western range of the Andes at an elevation of over fifteen thousand feet.

LIMA, the capital (Fig. 354), founded by the Spanish conquerors in 1535, 5. Chief cities is situated at the base of the Andes. CALLAO, the seaport of Lima, is about seven miles from the capital. Its harbor is but little more than an open roadstead partly protected by an island on the side. However. southwest since the winds and ocean swells are from the south,

while the coast is seldon—visited by storms, this sligh—protection is sufficient.

AREQUIPA, at an elevation oseven thousand feet, is separated from the sea by sixty miles oseset. Cuzco is on an interior table-land, at an elevation of overeleven thousand feet. The ruins of the Inca citadels and "palaces" are still to be seen, and many pure blooded and half-breed Incas still dwell in and near this anciencepital.

This country, named after r General Bolivar, the great South American Bolivia leader in the re-

volt against Spain, was robbe of its seacoast by Chile. Its surface is mountainous, with broad and very higher plateaus between the mountain ranges. In one of these valleys lies Lake Titicace (Fig. 355), partly in Peru and partly is Bolivia. This lake, the greatest in South America, is about a third the size of Lake Erie. It is the most elevated great lake in the world, lying over twelve thousand fee above the sea.

The Incas occupied this region also, and mined much gold. Besides gold, the Spanish discovered veins of copper, tin, and sil-



Fig. 354. — A view of Lima, the capital of Peru.

ver, so that mining has been one of the most important industries of the country. It is said that over three billion dollars' worth of silver has been mined in Bolivia since the Spaniards first visited the country.

Both the mining and the work of obtaining the metals from the ore are done very crudely. For example, instead of using costly machines for crushing the ore, as in the United States, one method is to roll bowlders around on the ore. Since there are very few railways, goods are carried for the most part by trains of pack mules, donkeys, alpacas, or llamas (Fig. 337). The llama here, as in Peru, is of great value to the inhabitants, not merely as a beast of burden, but also as a source of wool for clothing.



Fig. 355. - Indians in their grass boats on Lake Titicaca.

Like eastern Peru and the Amazon Valley of | forest wilderness. In the mountain valleys, how-Brazil, much of eastern Bolivia is an almost unknown | ever, there are settlements where agriculture is



Fig. 356.— La Paz, the largest city of Bolivia, situated in an arid valley among the lofty Andes.

carried on, with products similar to those of Peru. Name them. Most of these are consumed at home, though some coffee is exported.

A railway line connects western Bolivia with the sea; but there is great need of others. Another need is the improvement of the water ways to permit river transportation to the Atlantic. Through what rivers could boats pass to the sea?

Find the capital of Bolivia. LA PAZ (Fig. 356), the largest city, has more than three times as many inhabitants as the capital.

VII. CHILE

The eastern boundary of Chile is the divide between the Atlantic and Pacific Surface drainage; and since this runs features along the Andes, the country is very mountainous, and narrow in an east

reaches far into the bleak south temperate zone; and on the mountain slopes there is every climate, from torrid to frigid. The very name, Chile, is derived from an Indian word for snow.

There is also great difference in rainfall for northern Chile is arid, and in some portions an absolute desert; while central and southern Chile reach into the rainy belt of prevailing westerlies (p. 212). The best developed section of the country lies in the middle part, between the hot, arid north and the bleak, rainy south.

There is much mineral wealth, including gold, silver, coal, and copper.
Of these copper is one of Mining



Fig. 357. — The shipping in Valparaiso harbor.

and west direction. Measure its length; also its width. Except in the south, the coast line is regular, like that of the rest of South America.

The climate varies more than that of any other South American country.

The northern part is within the torrid zone, while the southern end

the most valuable minerals, and Chile, like the United States, is one of the great copper-producing countries of the world. Even more important than the copper are the beds of nitrate of soda, which yield many million dollars' worth of nitrate every year. This substance is one of the chief exports.

The nitrate beds lie in the midst of the Desert of Atscams, in which rain seldom falls. The substance occurs in layers from a few inches to one or two feet in thickness, over an area thirty or forty miles in breadth. After being dug out, the pure nitrate is dissolved and separated from its impurities, and hen sold. Its chief use is as a fertilizer, for which purpose large quantities are shipped from the port of lquque.

Agriculture is extensively carried on in Chile, especially in the rainy middle portion, as in many parts of the United States. The principal Crops are the various grains, tobacco, fruits, and vegetables. More wheat and barley are Produced than are needed at home, so that Chile helps to supply other nations with these grains. Large herds of cattle are reared; and sheep raising is one of the Chief industries in southern Chile. Hides, leather, and wool are exported.

There is more manufacturing than in most South American countries, the principal kinds being flour milling, cheese making, tanning, and shoemaking. Manufacturing is rapidly increasing, but, as in other South American countries, it is still necessary to import from Europe and the United States much of the machinery and other manufactured articles used.

Chile is one of the most progressive mations in South America. Its government is good, and its industries are well developed. This progress well developed. This progress is doubtless in large part due to the temperate climate, which requires energy on the part of its inhabitants, and invites settlers from the temperate climate of Europe. It is interesting to note that the two most advanced nations of South America lie side by side in the temperate zone, while the next most progressive country, Brazil, is partly in that zone.

The principal cities of Chile are SAN-TIAGO, the capital and largest city, situated inland, and VALPARAISO, its seaport (Fig. 357). The harbor of Valparaiso, like that of Callao

(p. 252), is open to the north; but the wind seldom blows from that quarter.

VIII. ISLANDS NEAR THE CONTINENT

Just off the coast of Venezuela, opposite the mouth of the Orinoco, is the low island of *Trinidad*, a British possession. This island is especially noted for its pitch lake, from which asphaltum is obtained for use in making asphalt pavements. The asphaltum oozes slowly from the ground; and, as it is dug out, more takes its place, showing that there is

a very large supply beneath the surface.

Just east of the southern tip of South America are the Falkland Islands, which belong to Great Britain. Still farther east are the islands of South Georgia, also British.

They are cold, bleak lands, with no permanent inhabitants. Yet they are no nearer the south frigid zone than parts of Great Britain are to the north frigid zone. This difference in climate is due to the fact that Great Britain is affected by a warm ocean current, while South Georgia is swept by cold currents from the Antarctic.

West of Chile, and belonging to that country, is the island of Juan Fernandez. This is the island where Selkirk was wrecked, and by some is thought to be the island home of Robinson Crusoe. It seems quite certain, however, that Defoe described Tobago, just north of Trinidad, instead of Juan Fernandez.

The Galapagos Islands, about six hundred miles west of Ecuador, on the equator, are a group of small volcanic islands owned by Ecuador. They are too far from the continent to show on our map (see Fig. 2).

1. What striking resemblances in surface features are there between North and South America? 2. What differences? 3. Show how the temperature varies from place to Ouestion place. 4. The rainfall. 5. Describe the plant and animal life. 6. What can you tell about the native inhabitants? 7. The Spaniards and recent immigrants? 8. What can you tell about the government? 9. Compare Brazil with the United States in area. 10. What about its climate and drainage? 11. Navigation on its rivers? 12. Describe the tropical forest. 13. What valuable products are obtained there? 14. What are the agricultural products of Brazil? 15. What is the condition of mining? Of manufacturing? 16. Name and locate the principal cities. 17. Give some reasons why Argentina is the most progressive country of South America. 18. What about its agriculture? 19. Lumbering and mining? 20. Manufacturing and commerce? 21. Name and locate its principal cities. 22. Give one

reason for the slower development of Uruguay. 23. What are its products? 24. Name and locate its chief city. 25. What kind of country is Paraguay? Tell about its products and chief city. 26. Name the Guianas. What about their products and commerce? 27. What are the surface features of Venezuela? 28. What are its products? 29. Locate the chief city. 30. How do the tropical Andean countries resemble one another in surface features? 31. In variety of climate and of farm products? 32. In abundance of minerals? 33. In location of principal cities? 34. In character of their government? 85. What about the surface features and the products of Colombia? 36. What is its leading city? 37. Describe the surface and climate of Ecuador. 88. What are its agricultural products? 39. What about mining and manufacturing? 40. Name and locate the principal cities of Ecuador. 41. What climate has Peru? 42. What about mining there? 43. Agriculture? 44. Manufacturing and transportation? 45. Name and locate its chief cities. 46. Describe the surface features of Bolivia. 47. Tell about mining in that country. 48. Agriculture. 49. Commerce and chief cities. 50. Describe the surface of Chile. 51. The climate. 52. What about mining there? 53. Agriculture? 54. Manufacturing? 55. Why has Chile made such progress? 56. Locate the chief cities. 57. Name, locate, and tell the principal facts about the islands near South America.

1. Which of the two Americas has the advantage in regard to latitude? Show how. 2. Tell about the effects of the trade winds in each continent (Fig. 296). 3. Of the prevailing westerlies (Figs. 297 and 299). 4. Locate the arid sections in each continent, and give the reasons for the lack of rain (Figs. 296, 297). 5. Point out the rainiest section in each, and state the causes. 6. Which

of the two continents has the better position for world commerce? Why? 7. Into what ocean do the principal rivers of South America flow? Of North America? 8. What can you say about the regularity of the coast of the two continents? Which has the advantage in this respect? How? 9. Locate the five principal coast cities of South America; of North America. State the main advantages of the location in each case. 10. What about the number of lakes in each continent and their value for commerce? 11. What about the number of large cities in the interior of each continent? 12. Compare both Brazil and Argentina with the United States in area; in population. 13. Compare Chile with Texas in these two respects. 14. Make a list of the important farm products common to South America and the United States. 15. Name some products that are extensively raised in one and not in the other. 16. Which parts of each continent are especially noted for cotton? Coffee? Wheat? Cattle and sheep? Copper? Precious metals? 17. What is the prevailing kind of government in North and in South America? What sections have a different kind of government?

1. Give several reasons why South America has been much less rapidly settled than North America.

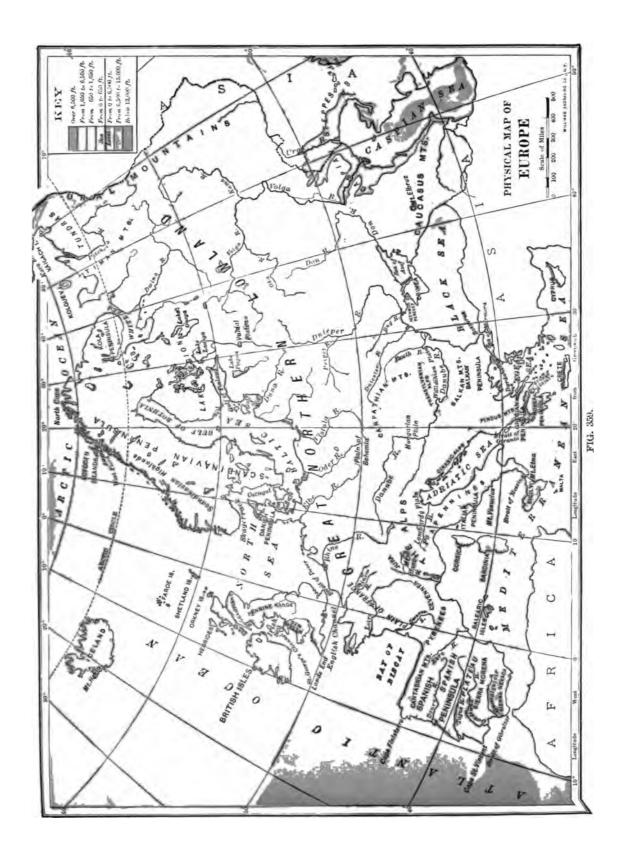
2. How does the Spaniards' treatment of the Incas compare with their treatment of the North American Indians?

3. Find out some of the ways in which coffee is often adulterated.

4. Make a drawing of South America; a sand model.

5. If you were expecting to emigrate there, in what country would you prefer to settle? Why? 6. What products of South America are you probably seeing and using from week to week? 7. Is Brazil likely to rival the United States in importance in the future? Why? 8. Is it an advantage or disadvantage for South America that it is divided into so many more countries than North America? Why?

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PART IV. EUROPE

1. On the map (Fig. 358) trace the boundary beeen Europe and Asia. 2. What peninsulas are
there? 3. What countries are wholly
or partly on peninsulas? 4. How
es Russia compare in area with the other countries
Europe? With the United States? (See Appenx, p. 424.) 5. Where are the principal mounins? 6. Name and locate the principal rivers.
The 40th parallel of latitude crosses what counies of Europe? Through or near what cities in
e United States does it pass?

I. GENERAL FACTS

THE continent of Europe was named when ly the southern part of it was known. As people learned more about hy called a stinent it, they found that Europe was nnected with Asia, being, in fact, a great ninsula extending westward. We now now that Europe and Asia together really rm a single continent, which is called urasia. But since Europe has been long nsidered a separate continent, and has enso important as the home of the civilized ces, it is still the custom to class it as a ntinent.

As in the case of North America, the owth of the continent of Europe has required millions of years. Far during the back in time mountains approximation of peared above the sea in several matains in the places, as in the northwestern portion of the continent. Altough greatly worn away, these mountains ay still be seen in Finland, Scandinavia, and Scotland (Figs. 359 and 360), as well in Germany, Belgium, and other sections. hey resemble the mountains of New Engnd and eastern Canada.

Other mountain ranges were formed in uthern Europe; but, like those of west-

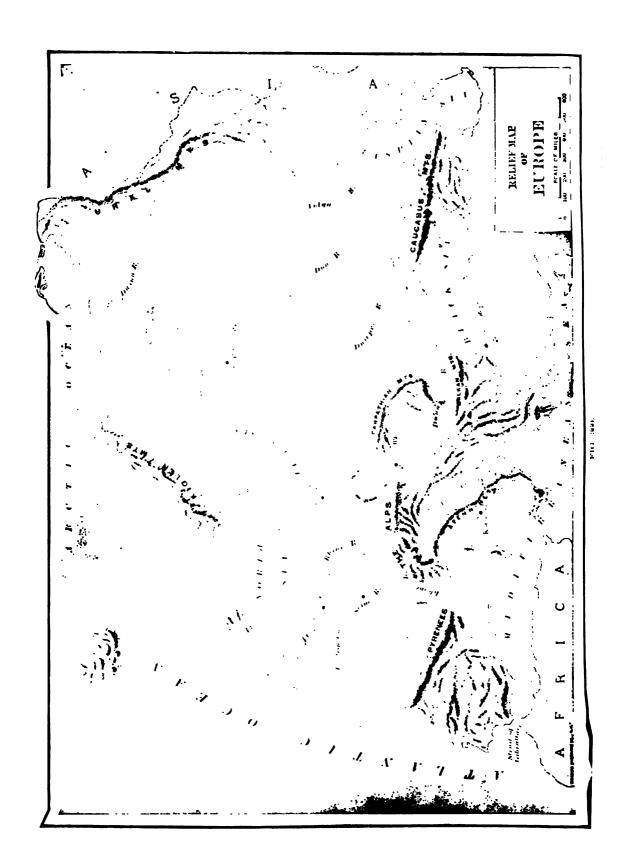
ern America, they are younger and are far less worn away than the older moun-Therefore 2. Later mountains mentioned. the Pyrenees (Fig. 391), Alps tain ranges, and (Fig. 430), and Caucasus (Fig. their direction 361) mountains are still of great height. Find each on Figure 359. Besides the mountains named, there is a long, low chain, known as the Urals, which extends north and south along the eastern boundary of Europe. Other highlands are shown on Figure 360. Where are they mainly situated?

The highest mountains in Europe are in the south, and they extend in various directions, though mainly east and west. How does this arrangement promise to affect the climate? Next to the Caucasus (Fig. 361), the loftiest of all are the Alps (Figs. 430, 434). The rains and snows of the Alps find their way to the sea through several of the large rivers of Europe. What are the names of the largest (Fig. 359)? Headwaters of four of them—the Po, Rhone, Rhine, and Danube—are within forty miles of one another in the Alps.

Europe owes much of its very irregular outline to the fact that the mountains are not continuous, and consist of chains extending in various directions. How does Europe compare with North America in this respect? With South America?

Between the mountains of the northwest, the east, and the south there is an extensive lowland (Fig. 360).

A part of this has been lowered plain between beneath the sea by the sinking these mountains of the land, thus forming the shallow Baltic Sea. This plain extends from southern England, through Belgium and Holland,



**B "Low Countries," entirely across | found? Most of the coal is bituminous, any (Fig. 420) and Russia (Fig. 360). | though there is some anthracite. In a

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Fig. 361.—A view over the crests of the lofty snow-covered Caucasus Mountains. The valley in the front is filled with clouds.

s; also America during the Coal Period. State once more how was formed (p. 2). Figure 362

number of sections lignite, or brown coal, is mined; and peat is also dug for fuel in western Europe.

At the same period that eastern North

America was invaded by a great ice sheet 5. The great from the north, Ice Age snow gathered on the high-lands of northwestern Europe and spread outward in all directions. Figure 363 shows the extent of the European ice sheet. It made the same changes in Europe as in our country. State what these changes were (p. 9).

The irregular coast of northwestern Europe, like that of northeastern North 6. Character of the coast line, America, is due and advantages to the sinking it gives of the land. The Baltic Sea and its gulfs are old land valleys, sunk beneath the sea; and the hills of this

North Sea

Fig. 362. - Map of the coal fields of Europe.

the parts of Europe in which coal sunken land form either islands, peninsulas, occur. In what countries are they or shallow banks where food fish abound.

During the growth of the mountains of southern Europe, the rising and sinking of small areas of land has made many peninsulas, with bays, gulfs, islands, and seas between. The Mediterranean Sea occupies a basin, thousands of feet in depth, formed by the sinking of this part of the earth's crust. Some of the islands in the Medi-

boundary of western United States, it passes entirely south of England, crosses France near Paris, and ex-Climate tends through southern Ger- 1. The latimany and Russia. From this tude of Europe it is seen that by far the larger part of Europe lies farther north than the United States, and due east of Canada. St. Peters-



Fig. 363. — The ice sheet of Europe.

terranean Sea were partly or wholly built up by volcanic action.

As a result of all these movements of the land, Europe has the most irregular coast of all the continents. Name the larger peninsulas, gulfs, and seas that border Europe. How about the number of fine harbors? Show, by examples, how such an irregular coast is of advantage in allowing vessels to sail far into the interior of the continent.

Trace the 50th parallel of latitude on a globe or map of the world. Notice that while the 49th parallel forms the northern

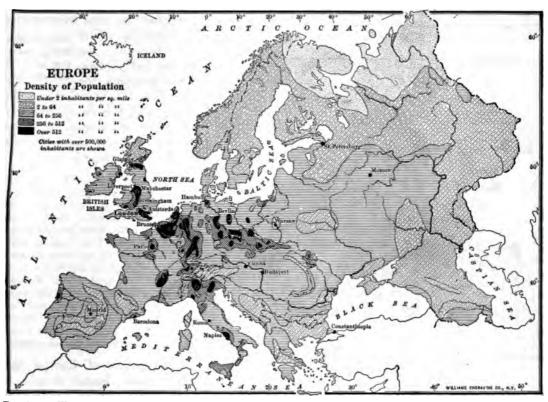
burg is in the same latitude as northem Labrador; and the tips of the peninsulas of southern Europe reach no farther south than the southern boundary of Virginia.

In spite of this latitude, and of the fact that Europe is much less than half the size of North America, that continent supports over three times tion and crops as many inhabitants as our own, or over four hundred million persons.

It is true that, in the Far North, near the Arctic Ocean, the climate is bleak, and there are barren, frozen tundras. But south of this is a belt of fir, spruce, pine, and other

Within the forest belt, and south of it, the climate permits the growth of the grains and fruits that flourish in southern Canada and northern United States. Farther south, in southern Europe, in the latitude of central United States, such semitropical fruits as oranges, lemons, olives, possible for crops to be raised nearer the pole in Europe than in any other part of the Without such winds, much of that globe. densely populated continent (Fig. 364) would be a barren waste, like Labrador.

In North America, where high mountains extend north and south along the entire



What reasons can you suggest for the fact that certain parts, like central Spain, northern Russia, and Scandinavia, and the country between the Black and Caspian seas, are not densely populated?

and figs are cultivated. That is to say, the products of the greater part of Europe are such as grow several hundred miles farther south in eastern North America.

The prevailing westerlies are felt in northern Europe as well as in the United

States (p. 212). Blowing from 3. Explanation of these surprisacross the warm ocean waters ing facts

(p. 223), they bring an enormous amount of heat to the land. It is these west winds, more than any other thing, that make it western side of the continent, the warm, damp air soon loses its moisture as it

moves eastward (p. 211). In Europe, on the other hand, of north and where the higher ranges ex- south mountain tend nearly east and west, the ranges in the west mountains interfere much less

(2) The absence

with the movement of vapor to the interior. For that reason the west winds give up their moisture little by little, and over a wide area. This is the chief reason why there is no arid land in the belt of wester-

lies, from western Ireland to eastern Russia. Another reason is that, in this cool northern climate, the soil loses little of its water by evaporation.

The effect of the ocean winds is naturally greatest near the coast, as in western North America. Therefore, England has a mild, rainy climate; but the farther east one goes, the less the influence of the ocean is felt. Thus, in eastern Russia there are great extremes of heat and cold, and there is danger of serious droughts. Compare the summer and

Fig. 365. - Rainfall map of Europe.

winter temperature (Figs. 317 and 318) and the rainfall (Fig. 365) of these two sections.

The numerous inland seas are another important cause of the mild climate of parts of Europe. Draw an outline map of the continent, locating these seas. How does the Mediterranean compare in length with Lake Superior? It will be remembered that our Great Lakes produce a distinct influence on the climate of the neighboring land, reducing the heat of summer and the cold of winter (p. 93). It is partly because of this influence that southern Italy, Greece, France, and Spain have such an equable and semi-tropical climate. How must these seas affect the rainfall?

The cyclonic storms which pass over eastern North America often cross the ocean and continue across Europe (p. 217), causing variable winds, as

in eastern United States and Canada. You recall that the east winds of the cyclonic storms bring much rain to eastern United States (p. 215). They cannot do this in eastern Europe, because there is no great ocean near at hand to supply the vapor. Therefore the rainfall here is light.

Southern Europe, like southern Califonia, is not reached by the westerlies summer, for it then lies within Why souther

the belt of the Europe has a horse latitudes. dry, mild This accounts for climate the fact that southern Spain Italy, and Greece receive ver little rain in summer. Examin Figure 365 to see where the rainfall in Europe is light.

The east-west direction of the lost mountains exerts a great influence of the climate of the countries that lie the north and south of them. Risin like great walls, these mountains provent south winds from bearing nort ward the heat of the Mediterrane basin; and they also interfere with the passage of cold north winds. Norther Florida, much farther south than southern Europe, is sometimes visited by cold waves and frosts; but such winds cannot reach portions of southern Europthat are protected by the mountains.

The people of Europe hav never been bound closely to gether as one great nation. Reasons for the One of the reasons for this is many countrie the fact that so many parts of the continent are separated from all others. Spain, for example, is not only a peninsula, but it is separated from France by lofty mountains. The British Isles are entirely of the off by water; Scandinavia nearly so; and Italy is bounded on the north by the Alp and on all other sides by water.

It is natural that people living in suppositions should not feel a common interes with those who are so separated from the Thus many different customs, beliefs, as languages have arisen; and because of the





FIG. 366

differences there are many more nations in Europe than in North America. Count them (Fig. 358).

Many jealousies and disputes have arisen between the different nations. These have often led to war, as a result of which one nation has sometimes seized territory from another. In this way the boundaries between the nations have suffered many changes. Notice how irregular some of the boundary lines are. Those of Germany, for example, have been agreed upon only after the loss of tens of thousands of human lives in war.

- 1. Why is Europe classed as a continent? 2. In the growth of the continent, tell about the formation of mountains in the northwest.

 3. Where else are mountains found? Review Questions What do you know about them? 4. Describe the large plain. 5. Where are the coal beds? What kinds are found? 6. Locate the boundaries of the ice sheet (Fig. 363). What are some of its effects? 7. Explain the irregular coast line, and state some of its advantages. 8. What is the latitude of Europe? 9. What about the population, and the farm products? 10. How is the climate influenced by the prevailing westerlies? 11. By the absence of north and south mountain ranges in the west? 12. By the inland seas? 13. Why do not the cyclonic storms supply abundant rains in eastern Europe? 14. Why is the climate of southern Europe dry and mild? 15. Give some reasons for so many countries in Europe. Why are the boundary lines often irregular?
- 1. Compare Europe with North America in regard to highlands. 2. Lowlands. 3. Rivers. 4. Distribution of coal beds (Fig. 268).

 5. Extent of ice covering. 6. Character of coast line. 7. Latitude.

 8. Population. 9. In what respects unlike in climate? 10. In what respects unlike in climate? 11. Compare the number of degrees of longitude in Europe with the number in North America. 12. Where are the most densely settled parts in each continent? Why this difference?
- 1. What results might follow if the mountains of Europe extended north and south near the western coast? 2. Mention some of the results if the land should rise near Gibraltar, changing the Mediterranean to a closed sea. How would the British Isles be influenced? Also Italy? 3. Can you tell about any of the great wars and generals of Germany, England, or France? 4. Can you tell of any of the changes in boundary lines; for example, in Poland or between France and Germany?

II. THE BRITISH ISLES

1. Walk toward the British Isles. 2. What two large islands do they include? 3. What waters separate these two? 4. Name the three divisions of Great Britain.

5. Locate the Orkney, Hebrides, Shetland, and Channel Islands. They are included among the British Isles. 6. What sea lies east of Great Britain? 7. What country is nearest to Great Britain (Fig. 358)? What waters separate the two? 8. Compare the coast line with that of Spain (Fig. 390); of Norway (Fig. 358).

London is fully seven hundred miles farther north than New York City, and the British Isles are in the Remarkable same latitude as Labrador. facts about England itself is a little smaller these isles than Alabama; and the British Isles, including England, Wales, Scotland, Ireland, and several hundred small islands, are about the size of the state of New Mexico.

Yet in spite of their northern position and their small area, the largest city in the world is located in the British Isles. Moreover, Great Britain has more manufacturing than any nation excepting the United States. It has more foreign trade, a greater number of vessels upon the sea, and more colonies (Fig. 381) than any other nation on the earth.

The character of the British people doubtless offers one important explanation of the
above facts. Being so near
the mainland, the islands have
been invaded by many hardy
people, among them the Angles
and Saxons, from whom the
words English and AngloSaxons have been derived. The Normans
also entered Britain, and still earlier the
Romans under the lead of Julius Cæsar.

Although formerly divided into different nations, England, Scotland, Wales, and Ireland are now united to form the *United Kingdom of Great Britain and Ireland*.

The inhabitants of each of these sections are noted for their energy, intelligence, and good character

The prevailing westerly winds also partly account for the greatness of the grather of the greatness of the grather of this greatness of the grather of three these winds blow across the British Isles; and, since they have crossed a vast expanse of warm water (p. 261), they greatly temper the climate. Indeed, the winter season is milder than

that in northern United States, and the summer is cooler (Figs. 317 and 318).

The prevailing westerlies, bearing an abundance of moisture (p. 261), so distribute it over the islands that no section suffers from drought. Yet the western portions receive more rain than the eastern, because the damp ocean winds reach them first (Fig. 367).

As already stated (p. 257), the moun3. By the chartains of acter of the sur- Great face
Britain, like those of New England, are so old that they are worn very low. While

these uplands rarely rise more than one or two thousand feet above sea level, there are occasional higher peaks of hard rock. For example, the granite peak of Ben Nevis, in Scotland, the highest point in the British Isles, is forty-three hundred feet in elevation. The Scottish Highlands (Fig. 368) are so rugged and barren that few people are able to live there.

Where the rocks are softer, and less disturbed by mountain folding, there are lower and more level tracts. Point out the broadest lowland of Ireland, Scotland, and Eng-

land (Fig. 359). A narrow and very small, but important, lowland lies in southern Scotland, near Edinburgh and Glasgow. There the rocks are so much softer than those of the highlands that, instead of a barren, hilly country, there is a fertile lowland. Upon this, called the *Lowlands of Scotland*, there are thriving industries and a dense

population, as in many parts of England.

A highland rim extends around Ireland (Fig. 359), inclosing a lower, more level interior. Thus the surface of this island has the form of a shallow plate, and much of the land can be cultivated.

A large part of these islands, therefore, is either plain or low, hilly land, suited to agriculture. Thus the surface features have helped to make the British Isles an important nation.

The coast line of the British Isles is very irregular, as

Belfager

Dundee

Abendeen

Abendeen

Core 90 inches

Core 10 inches

Birmingham

E N G F A N B

Cork

London 3

Southampion 10

Southampion 1

Fig. 367. — Rainfall of British Isles.

may be seen from the map 4. By the ir(Fig. 366). State the reasons regular coast
(p. 259). How does the coast line
compare with that of New England?
Since the mountainous western portion
had more deep valleys for the sea to enter
than the level plains of the east, there are
more good harbors on the west than or
the east coast. On both sides, however, the
mouths of the larger rivers usually make
good ports. Why?

Another reason for the importance of the United Kingdom is the fact that these islands

re great natural resources, and have there e developed important industries. In ty the natural our study of the United States ecources we found that the people are inly engaged in lumbering, agriculture, ing, mining, manufacturing, and comrece. There is very little lumbering in British Isles for, although in early times arge part of the land was wooded, little est now remains; and lumber is, theree, one of the leading imports. But all

the other induss are important, l some of them remarkably deoped.

lince no portion he British Isles is arid, the iculture ranchive Stock ing intry is not develd there as in stern United tes-Much live ck is raised, howr (Fig. 368). In t, grazing has of so increased in portance that

re is now twice as much land in passe as in crops, and the British Isles are ed for their great number of fine cattle, ep, and horses. There are about thirty lion sheep on the Isles, while there forty-five million people. The Shetd Islands are famous for Shetland pos; and on the three Channel Islands,—sey, Guernsey, and Alderney, near the ench coast,—three breeds of cattle have n developed, which are well known in United States.

The importance of grazing is partly eximed by the fact that much of the surface, that of New England, is too rocky or intainous to be cultivated (Fig. 368). ides this, some of the plains in eastern gland, although too sterile for farming,

make excellent pasture land (Fig. 369). The mild winters and the damp air, which encourage the growth of grass, further favor stock raising. In addition, the cheapness with which grain is raised in other countries, like the United States, and carried to the British Isles, has made it less necessary for the British to use their land in raising grain.

The cool summer climate, which is of advantage in some respects, is unfavorable



Fig. 368. — Sheep grazing on the mountain slopes in the Scottish Highlands.

to many kinds of farming. For example, it prevents the production of corn, cotton, tobacco, and grapes, which re- 2. Other farm quire warm summers. More products hardy products, however, such as oats, barley, and wheat, are easily raised. Turnips, potatoes, beans, and peas are other important crops; also hops, which, together with barley, are used in the manufacture of beer. Owing to the many towns and cities, truck farming is of great importance.

The demand for farm land has been so great that large areas of swamp have been reclaimed by careful drainage, and these now make some of the most fertile farms. Yet in spite of the care that has been given to cultivating the soil, and to raising live stock, far less food is produced in the British Isles than is needed by the inhabitants. There are such vast multitudes of people engaged in other



Fig. 369. - An English farm with a flock of sheep and a herd of cattle grazing in the pasture.

occupations that, if they were deprived of food from abroad, they would, it is said, begin to suffer from famine within a month. How different that is from our own country, which has so large an area, and so varied a climate, that it not only supplies the food we need, but produces enormous quantities to be sent abroad!

Since the early inhabitants had to cross the sea in order to reach these islands, and since most of their descendants have lived either on or near the coast, it is natural that many of the British should adopt a seafaring life. This sort of life has also been encouraged by the fact that food fish abound on the shallow banks of the North Sea and of the ocean to the north and west of the islands. More

than one hundred thousand men and twenty-five thousand boats from the British Isles are employed in fishing.

Among the fish caught are cod, haddock, and herring, as off the coast of New England and Newfoundland. Another important kind is a flatfish, the sole, which resembles the flounder of our eastern coast. Salmon enter the rivers of northern Great Britain, and oysters are found along the southern

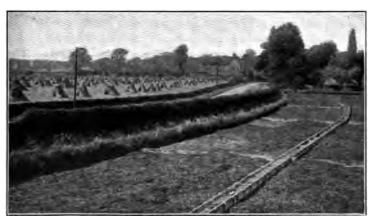


Fig. 370. — An English country scene. On the left of the road, bordered by hedges, is a field of wheat; on the right, watercress is being raised.

Many fishing hamlets are scattered e coast; but the fishing industry in our country, is becoming cenore and more in the large towns, ossess the capital for large vessels ensive fishing outfits. The chief enters, like Boston and Gloucester chusetts, are LONDON, HULL, and (Fig. 366) in England, and ABER-Scotland.

I the resources of the British Isles rly attracted people from southern Europe was the tin in south-

Europe was the tin in southwestern England. This metal is not mined in many parts of id, but has always been in great

Even before the time of Cæsar, m the Mediterranean came to Engbtain tin for use in the manufacronze. Small quantities of copper, c, and even gold and silver ores, o been discovered in the British ut at present there is little mining metals.

other hand, the abundance of two nerals, coal and iron ore, reminds us

of our own country (pp. 3 and 259). The one small island Britain produces more than half as il as all of our states together; and ted States and Great Britain are leading coal-producing countries of d. Figure 371 shows the sections; Britain in which coal is found. ost of the coal is bituminous, that ern Wales is more like our anthraarge numbers of miners in the States are Welshmen who have m that section.

re is also abundant and favorably None of the British iron ore is coal; and in some places the same used to bring both coal and iron to ice. Limestone is also abundant at hand. This reminds us of the is at Birmingham, Ala. (p. 79), named after BIRMINGHAM, Engrause they resemble each other in

having an abundance of coal and iron ore near together. Find Birmingham in Figure 371. Note the other cities near the coal fields. Why should large manufacturing cities develop here? The extent of the mining industry in the United Kingdom is indicated by the fact that more than half a million persons are employed underground.



Fig. 371. — Map showing coal distribution in British Isles.

Besides these minerals, various building stones are extensively quarried, as granite in Scotland, and slate in northern Wales. Salt is also found; tant mineral and there is clay of such excellent quality for earthenware that several towns have become noted for their potteries, as have Trenton and Cincinnati in the United States.

Considering the abundance of coal and iron ore on the one hand, and of wool from the millions of sheep on the other, it is clear favorable to its that Great Britain has materials for extensive manufacture. As in

New England, the hilly sections have abundant water power due to the glacier, and this also has favored manufacturing. Later, when the use of steam became known, the abundant stores of coal were of great importance.

The use of steam has led to the building of many factories, and to the growth of large manufacturing cities. Therefore, the making of cloth on hand



Fig. 372. - A country road in England.

looms, at the homes of the weavers, has been generally abandoned, although one still sees it in some of the country districts.

Even in very early times the English were engaged in the weaving of woolen cloth. Later, owing to numerous wars, and to bad government on the continent, England became a refuge for industrial people from the mainland. This led to rapid progress in manufacturing. The peculiar energy and inventive genius of the British, which kept their machinery in advance of that used by other nations, must also be considered. For example, it was a Scotchman, James Watt, who invented the modern steam engine; and it was George Stephenson who invented the first locomotive.

The very smallness of the country is another advantage; for no matter where a factory may be located, it is sure to be not far from coal fields, and within a few miles of a shipping point.

In the mountainous section of northern England, near both coal and wool, there are hundreds of factories for the manufacture of woolen cloth. The principal center of this trade is LEEDS, which has 2. Leading the added advantage of water kinds power. On the western side (1) Woolen of this hilly region is BRADFORD, noted for its broadcloth and worsted goods; and neighboring cities manufacture woolen yarn, hosiery, carpets, and blankets.

The woolen industry extends northward into Scotland and southward to LEICESTER, where the surrounding plains produce a breed of sheep that yields a wool suitable for the manufacture of worsted yar.

In spite of the enormous number of sheep in the British Isles, the manufacturing industry has so far outgrown the local supply of wool that millions of pounds must be imported every year. This condition resembles that of New England, where much of the wool is brought from the West or from foreign countries.

From the spinning and weaving of wool it was cony to turn to the (2) Cotton manufacture of manufacturing

cotton goods; and on the western side of the northern mountains we find a great cotton-manufacturing industry. Dampness is one of the points in favor of that section, for in a dry air cotton is in danger of becoming too brittle to spin and weave easily. Another reason why this work is best developed on the west side of the island is the fact that it is nearer the United States, from which so much of the raw cotton comes.

Since the British climate will not permit the cultivation of cotton, it is necessary to import all that is used. It requires over two billion pounds a year to supply the mills. Although much cotton is now obtained from Egypt, India, and other parts of the British Empire, our Southern States still supply the greatest quantity. The center of the cotton manufacturing is MANCHESTER. What other cities do you find situated near by?

The central portion of Great Britain, including southern Scotland and the two sides of the mountain range of northern England, is the seat of the greatest textile industry in the world. Can you name

manufactures steel rails and armor plates for war ships. GLASGOW is a center for shipbuilding and for the manufacture of locomotives and machinery of various kinds. In the smaller cities and towns near these places, there are similar works.

As in New England, many places occupied with the textile industry also produce textile machinery and other iron and steel goods. The island is so

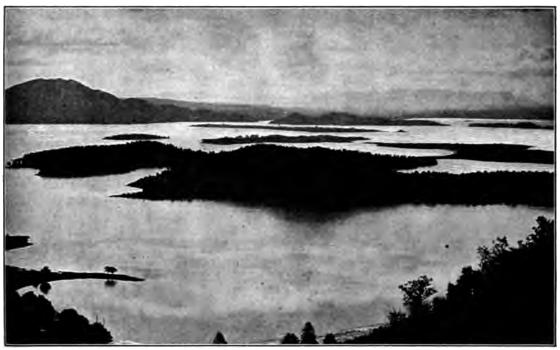


Fig. 373. - Loch Lomond, a beautiful lake on the southern border of the Scottish Highlands.

cities of New England which are likewise engaged in cotton and woolen manufacture (p. 42)?

The cities of Great Britain that are most noted for iron and steel products are (3) Iron and BIRMINGHAM and SHEFFIELD teel manuface in England, and GLASGOW turing in Scotland. BIRMINGHAM manufactures jewelry, watches, firearms, bicycles, steam engines, etc. SHEFFIELD has for centuries been noted for its cutlery, the presence of grindstone quarries in the neighborhood being one reason for this particular industry. Why? Sheffield also

small that coal and iron are cheaply shipped to all points; and on this account, manufacturing, though best developed near the coal fields, is not confined to these districts.

Thus we see that here, as in the United States, coal makes possible an enormous manufacturing industry. There is so much coal in Great Britain that, in spite of the forest of chimneys in England and southern Scotland, the output of coal is more than sufficient to meet the demands. The raw materials for manufacture, however, are not sufficient; for all the cotton, much of the wool, and part of the iron ore must be imported.

The three industries connected with cotton, wool, and iron have made Great

Britain one of the great workshops of the world. The most important is cotton manufacturing; iron ranks next; and wool is third.

What has thus far been said applies chiefly to Great Britain; but Ireland forms

Contrast of Ireland with Great Britain

1. In prominence of its agriculture

a striking contrast to Great Britain in several respects. In the first place, it is mainly a country of farms instead of manufactures (Fig. 374). The mild climate and damp

air insure excellent grass throughout the year, and about four fifths of the farm land

from decay, so that such vegetation collects until it forms a sod, which, when dug up and dried, makes a fairly good fuel (Fig. 8). It will be remembered that similar deposits, in the larger swamps of the Coal Period, were the beginning of the coal beds which are now of so much value (p. 2).

On account of the lack of fuel, most of the manufacturing in Ireland is done on

one twelfth of the entire surface of the island. The

water in these bogs protects the swamp vegetation

the manufacturing in Ireland is done on the eastern side, where coal is 8. In manufaceasily obtained from England turing or Scotland. At one point the two islands are only thirteen miles apart. One of the most important manufacturing industries

> is the making of linen. The Irish linens, which take high rank in our country, are made from the inner bark of the flax plant. Flax is grown in various parts of the United States, but mainly for the sake of the seed, from which linseed oil is made for use in mixing paints and in making varnish. In Ireland, however, flax is raised chiefly for its fiber. The damp climate there is favorable to its growth, and the cheap labor makes possible the great amount of care required in preparing it for the manufacture of linen.



Fig. 374. — A country village in Ireland, surrounded by pastures and fields of grain.

is in pasture. It follows, therefore, that great numbers of cattle, sheep, and horses are raised. As in Great Britain, the principal grain is oats; but barley, wheat, potatoes, and turnips are also grown.

Again, unlike Great Britain, Ireland is very barren of minerals. Building stones, such as granite, marble, and sandstone, are found, but there is very little coal or iron.

The lack of coal for domestic use is partly made up by the abundance of "turf," or peat. Owing to the deposits of glacial drift, which have formed dams across the streams (Fig. 363), the level interior is so poorly drained that swamps, or bogs, occupy about The stem of flax is tall and slender, and a field of it presents somewhat the same appearance as a field of oats. Instead of being cut, like grain, it is pulled up and left lying upon the ground for some time, exposed to the weather, so that the gummy substance, which holds the woody matter and fiber to gether, may decay. Travelers in northern Ireland, in summer, see field after field covered with flax much of which is used in the linen factories of Belfast.

After the fiber has been separated from the woody core by machinery, it is split and combed out with a steel brush, and thus made ready for spinning. It is made into thread in much the same way as cotton and wool are, and this is then woven into napking tablecloths, etc. Name other articles made of lines.

Ireland offers a fourth contrast to Great Britain in regard to population. Not only is it far less

y peopled, but the number of inhabitants is using. Partly because of the unfavorable laws imposed by England, the Irish have long been discontented with lot; and for many years they have been leavineir country. Since

heir country. the number of inhabhas been reduced from million to four million hundred thousand. have sought refuge r in the United States anada.

e cities most noted nanufacturing have pal cities already been mentioned; dr locaid connec- n a m e l y, ith one LEEDS, BRADFORD, ICHESTER, SHEF-D, BIRMINGHAM, GLASGOW. What stries are developed ach? Tell where is located.

iere are other large along the coast; o much manufacturalls for an enormous rt of raw materials food, as well as the rt of manufactured ls. These cities , therefore, be the ways to and from sland. Since Great in lies far north, een Europe and the

World, these shippoints are naturally ed on the eastern, ern, and southern , at those points e the best harbors , and not far from the t industrial centers.

London is HULL, with LIVERPOOL on the opposite side; and in southern Scotland is EDINBURGH, near the coast, paired with GLASGOW on the west. On the south side



Fig. 375. - The location of London and Liverpool.

ONDON, on the east side, with BRISTOL

rst among the coastal cities to be noted | the two most important ports are SOUTHAMP-TON and PORTSMOUTH. What are the two site it on the west coast. North of principal cities of Ireland? Locate each.

Steamships, railway lines, and canals connect the various cities, carrying immense quantities of freight. In Great Britain and Ireland there are nearly four thousand miles of canal and over twenty-three thousand miles of railway.

London, the capital of the empire and the largest city in the world, is situated 2. London on the Thames River. Like (1) Its location many other British rivers, the Thames has a wide, deep mouth, owing to the sinking of the land. London is



Fig. 376. — London Bridge across the Thames, over which a stream of people and wagons is almost constantly passing.

located upon its banks as far inland as high tide allows vessels to go, or fifty miles from the open sea. The advantage of this position lies in the fact that, while it is in the interior of the island, it has direct water communication with foreign countries.

New York, we know, owes its greatness largely to the fact that it is the gateway to a productive interior, with an enormous area; but almost any point in England may be reached by rail from London in a few hours. Although Great Britain is so small, its population is nearly one half as great as that of the entire United States; and the port of London is the point of entrance for much of its food.

Even before the Romans came to Eng-

land, the site of London was a fortified camp, situated on a low hill surrounded by tidal marshes and mud flats. (3) Early his—The Romans had a ferry at tory and presthis point; and much later, ent size over eight hundred years ago, the first London Bridge was built (Fig. 376). The save the city a great start. Since the time, it has grown until Greater Londo > n now includes over 7,000,000 persons. Ho we does that compare with the number in Scotland? In Ireland? In New York City?

As in all great cities, or e of the principal industries is manufacturing. (3) Manufacturing and of goods are commercs made, as in New York, Chicago, and Philadelphia. However, the fact that Londo lacks coal and iron near at hand, places it at some diadvantage in manufacturin as compared with Liverpoorland Glasgow.

London is the greatest shipping point in the world. It—s rows of piers extend twent—miles down the river, and it—railways radiate in all directions (Fig. 375). It is no

so noted for its export of manufacture goods as are Liverpool and Glasgow, which are nearer the great manufacturing districts; but it is the chief center for imports. For example, nearly all the tea an wine used in Great Britain enter through London. The great warehouses are filled with goods from all climes, such as flour sugar, meat, tobacco, hides, and cocoanuts.

Being a very old city, many of the streets are narrow and crooked. On that account transportation of goods, and of people, is often slow and difficult. Some of the principal streets are too narrow for street cars, so that, unlike American cities, the people have to be carried through these streets mainly by omnibuses (Fig. 377). One of the largest companies formerly ran as many as thirteen hundred buses, and employed five thousand men and

fifteen thousand horses. About a third of the omnibuses are now being run by electricity. As in New York and other American cities, underground railways have been built in various parts of the city, running under houses and streets.

London is the capital of the British Empire (Fig. 381), which is the name given (4) Importance to the United Kingdom and its in other ways dependencies. It is a center for the publication of books and magazines, and is provided with noted picture galleries, libraries, museums, and magnificent buildings.

Its wealth and trade are so extensive that it has been the money center of the world, though New York, the money center of the United States, now rivals it. The leading bank, called the Bank of England, is the agent of the government in much of its business, and employs about a thousand persons.

Just below the city, on the south side of the river, the Greenwich Observatory (p. 203), from which meridians of longitude are num-

(5) Places of interest near London

meridians of longitude are numbered and time is regulated. A few miles up the Thames is Windsor Castle, one of the palaces of the

Sovereigns of the empire. Find CAMBRIDGE and Oxford (Fig. 366), the two leading university towns of Great Britain.



Fig. 377.—Omnibuses in one of the narrow London streets.

Southwest of London, on the coast, is SOUTHAMPTON, where many ocean steamers

from the United States stop (1) In the south of England (Fig. 375), and where fast trains wait to convey passengers to the metropolis. Close to Southampton is Portsmouth, which has a great navy yard.

Almost due west of London, near the head of Bristol Channel, is BRISTOL, which is engaged in the lumber trade and in tobacco and chocolate manufacturing. It was formerly next to London in size, but Liverpool has now



Fig. 378. — The famous Westminster Abbey in London.

far outstripped it. Can you suggest some reason why? Just west of Bristol is CARDIFF, in Wales, the chief British port for the export of coal.

Knowing the occupation of the dense population in northern England, we can tell the principal exports of HULL and LIVERPOOL. What must they be? The former city naturally trades mainly with Europe, and the latter with the Americas and West Africa.

Before the discovery of the New World, the west side of Great Britain had little center and shipping point, for the same resons that Liverpool is. State these reasons What must be some of its principal important exports? Why?

EDINBURGH, unlike the other large citinamed, is not very important either as shipping point or as a manufacturing ceter. It is distinguished as the capital Scotland, and as one of the most beautificities in the British Isles. In former daybefore Glasgow developed commerce will America, Edinburgh was much more ir portant than Glasgow; for it commande



Fig. 379. — The city of Edinburgh.

commerce, and LIVERPOOL (Fig. 375), therefore, had little business or growth. With the settlement of America, however, the city grew until it now has an immense trade with North and South America, and is the third city in size in the United Kingdom. Many passengers from America land at this port and go to London by rail. Besides its commerce, Liverpool is also important for its shipbuilding. Why is this a favorable place for such an industry? A ship canal, about thirty-five miles in length, has been built to MANCHESTER, at an expense of \$75,000,000.

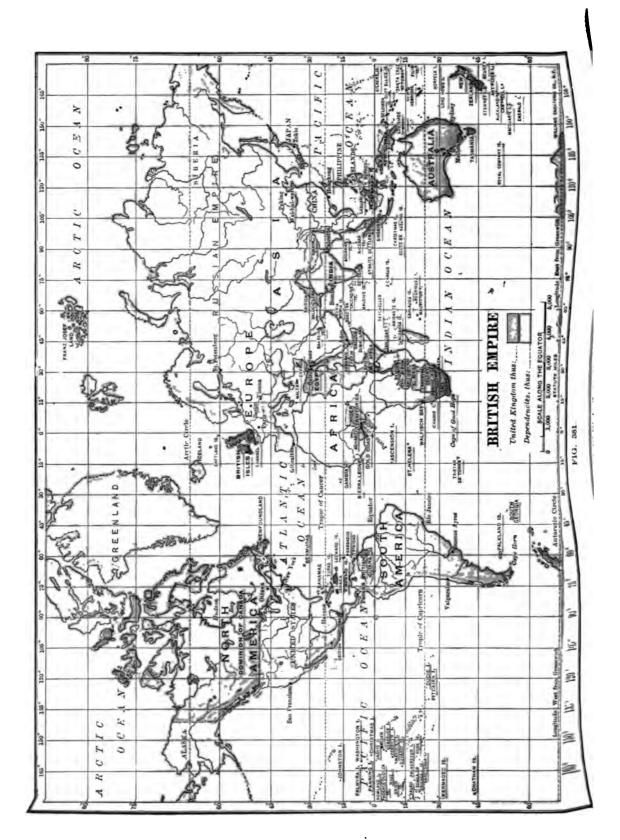
GLASGOW (Fig. 366), on the west side of
4. Cities of the Lowlands of Scotland, is
8cotland second to London in size among
British cities. It is a leading manufacturing

the entrance to the Lowlands of Scotland It still has important trade, and is a note educational center. The well-known Unversity of Edinburgh is situated here Leith, a short distance away, is the point of Edinburgh.

Farther north, on the coast, are DUNDE and ABERDEEN (p. 267). The former send forth a number of Arctic whaling vessel each year, and is also engaged in the manufacture of linen.

The principal cities of Ireland are on the east and south sides. Why? What has a ready been said about Belfast 5. Cities of (p. 270)? It is also noted Ireland for its shipbuilding. Dublin, the capits of Ireland, and the chief port for the Eng





ade, ships farm and other products to nd and receives manufactured goods irn. QUEENSTOWN has a fine harbor, a port of call for vessels bound from ca to Great Britain.

ile we have learned many facts about itish Isles, some important questions are not yet fully answered. For example, why does this little country possess more colonies (Fig. 381) than any nation of the earth? Further, why

it have the greatest foreign trade?

thy the greatest number

e of the reasons in to these questions are as follows: The onies fact that Great is so small—no point island being more than y miles from salt water reason why many of the

have become sailors. ot surprising, therefore, they have been great ers.

is it to be wondered at as these explorers disd new parts of the they laid claim to them name of their mother y. In this way, and by treat Britain came into

sion of the Thirteen Colonies of America, and of Canada, India, Ausmuch of Africa, and many other (Fig. 381). At present her terincludes about one fifth of the land s of the globe, and one quarter of labitants.

se colonies and dependencies help to n Great Britain's enormous foreign sogreat commerce; for the colonies have found it more to their advantage to trade with the r country than with other nations, speak a different language and have less understanding of them or sympathy with them. The colonies sell raw products and food stuffs to the mother country, and she sends to them clothing, steel goods, and other manufactured articles. It is largely the exchange of goods with these colonies that has made the foreign trade of Great Britain nearly twice that of any other nation. Next to her colonies, Great Britain's greatest trade is with the United States.

Some of the reasons why this little island owns more vessels than any 3. Why so other nation have already apmany ships



Fig. 380. — A street scene in Dublin.

peared. In fishing, exploring, and making settlements, a large number of ships have been needed; and many war ships have been required for the proper defense of her widely scattered colonies. Another reason for so large a navy is the fact that the British Isles are cut off from all other nations by water. For defense, therefore, the British must rely upon war ships rather than upon a standing army.

Further than this, the British are actually forced to own many ships. Here are over forty-five million people living on two small islands, from whose soil it is impossible to obtain

the necessary food. They must send ships away for their flour, meat, sugar, tea, coffee, etc.; and they must send abroad for much of their raw materials for manufacture. Also, in order to pay for the raw materials and food, their manufactured goods must be shipped to all parts of the world; otherwise such extensive manufacturing would be impossible. From this it is plain why a very large number of vessels must be employed; and there are two reasons why the



Fig. 382.—The House of Parliament in London, where the House of Lords and House of Commons meet.

British, rather than other nations, should own them. In the first place, such trade is profitable; and secondly, when they own their own vessels, they can send them where and when they will, and are, therefore, independent in case of war.

These facts, coupled with the remarkable energy of the British, are the principal reasons why the United Kingdom greatly surpasses all other nations in number of war ships and merchant vessels.

The government of the United Kingdom

Government of is a limited monarchy, the
the United present ruler being King

Kingdom George V. We know that

in the United States our general laws remade at Washington by a Congress composed of a Senate and a House of Representatives. In the United Kingdom the law-making body, which corresponds to our Congress, is called *Parliament*. It is like ewise composed of two bodies, the House of Lords and the House of Commons.

The House of Lords is made up of members of the nobility, or men with inherited titles, who are not elected by the people. In former times the Lords were so powerful that the people had little control of the government; but for many generations the Lords have had much less power. The House of Commons, whose members are elected by popular vote, is now by far the more important. Through them the people are able to make their own laws, and the government is therefore one that allows great freedom.

The sovereign corresponds to our President; but the execution of laws is really in charge of a Cabinet, composed of a Prime Minister and several other Ministers, who are responsible to the House of Commons for their actions. If the Ministers lose the support of the House, they are obliged to resign; and then others are appointed who will carry out the wishes of the records.

the position, size, and importance of these islands?

of the people.

1. What remarkable facts can you state about

2. How does the character of the inhabitants help to explain the importance of the islands? 3. How is the importance of the islands also partly explained by the prevailing winds? 4. By the character of the surface of the land? 5. By the irregular coast lime? 6. By the natural resources? 7. Tell about the raising of live stock on these islands. 8. What are the other leading farm products? 9. Of what importance is fishing? 10. What important minerals are found? 11. What conditions greatly favor manufacturing? 12. What can you tell about the woolen manufacturing? 13. Cotton manufact 125ing? 14. Iron and steel manufacturing? 15. How does Ireland compare with Great Britain in prominence of agriculture? What are the farm products of Ireland? 16. How does Ireland contrast with Great Britain in mining? 17. In manufacturin ! Describe the chief manufacturing industry. 18. Wh about the population of Ireland? 19. Name and locate the principal cities of the British Isles 20. Tell further about the location of Londo 21. Its early history and present size. 22. I manufacturing and commerce. 23. Its importan in other ways. 24. What places of interest are ne London? 25. Locate and state the important factor. about other cities in the south of England. 26.

th. 27. Tell about the leading cities of d. 28. Of Ireland. 29. How has the Britpire come to have so many colonies? 30. So foreign commerce? 31. So great a navy many merchant vessels? 32. Describe the nent of the British Isles.

lake a sketch map of Great Britain, showing ition of the highlands and lowlands, principal rivers and cities. 2. Considering the prevailing winds, which side of at cities must be most free from smoke?

y are sheep able to eat shorter grass than

4. Make a list of goods manufactured ax, and place samples in the school cabinet. te a short paper telling in what ways the of the British Isles and the United States on one another. 6. State ways in which igland and Great Britain resemble each other. at names of British cities have you met in udy of the United States? In what portion United States are they? 8. Read in George "Silas Marner" a description of old-fashioned cturing by hand looms. 9. Also in "John:, Gentleman," an account of the introduction into the factories. 10. What books writenglishmen have you read? 11. What early a explorers took part in the exploration of America?

CHE NETHERLANDS, BELGIUM, AND LUXEMBURG (Fig. 416)

compare the area of The Netherlands with Belgium (p. 424); with that of Great ady

Britain. 2. Compare the coast lines of The Netherlands and Belgium.

at large river crosses The Netherlands? the what countries does it flow? 4. What es border The Netherlands? 5. Belgium? to an outline map of these two countries.

1. The Netherlands (Holland)

ure 383 shows The Netherlands to be a ar country. The greater portion is very low, and some parts are as much as fifteen feet below rel. In fact, if protection against sea ver were not provided, about one half surface would be under water at least of the time. This explains why the ry, sometimes called Holland, is more only known as The Netherlands, means low country.

The Rhine has brought much of the soil; some of it, no doubt, all the way from the Alps. A large part of the country is, in fact, a delta of sand and clay built by the Rhine. It is so low and level that, over much of the surface, the only notable elevations are either sand dunes, thrown up by the wind, or glacial moraines of sand and gravel (p. 9). In Figure 363 notice how far the ice sheet advanced in this section. Hard rocks are found only in the extreme eastern and southeastern parts, where the



Fig. 383. — Map to show the portion of The Netherlands that is below sea level.

highest point is a little over a thousand feet above the sea.

As the population increased, and there was need for more land, it was found possible by building embankments, How the low-called dikes, to keep the high land has been tides and rivers from overflow-reclaimed ing the salt marshes and flood plains. The people have even undertaken the difficult task of reclaiming the shallow sea bottom itself. Such drainage began in the twelfth century and has continued until the present day. It has already about doubled the area of The Netherlands, and now a scheme is projected by which the Zuider Zee is to be reclaimed.

The first step in reclaiming a section of land is to build dikes around it. Then the water is pumped from the inclosure and emptied into the rivers, or into the sea. Windmills were formerly the only means for such pumping, and many are still in use (Fig. 384); but now many steam pumps are also used. These pumps must be worked all the time in order to keep out the rain water, as well as that which soaks through the soil.

There are sixteen hundred miles of sea dikes, some of which are fully three hundred feet thick,



Fig. 384. — A Dutch windmill, used for pumping the water from the low lands behind the dikes.

and thirty feet high. Some idea of the need of such great walls may be gained by standing behind one of them during a storm and listening to the fierce beating of the ocean waves on the opposite side, several feet above one's head.

The ditches for draining the land really form canals, which, by means of their embankments, inclose houses, gardens, and fields, much as fences or stone walls inclose houses and gardens in other countries. They are so numerous that they extend over the lowlands in a great network.

It might seem that a country so small as

Number and character of the people that a country so small as

this, and with such a surface, could not support a large population. Nevertheless, The

Netherlands has about two thirds as many inhabitants as the remarkably productive state of New York, which is four times as large. They are a very prosperous people, too.

Perhaps the leading cause for this prosperity is the excellent character of the *Dutch* people, as the Netherlanders are called. For centuries they have felt an intense love for civil and religious liberty; but, being

a small nation, they have suffered many hardships in attempting to maintain such liberty. At one time they were under German control; later they came under the cruel rule of Spain; but finally they obtained their independence, and their form of government is now a limited monarchy.

While their efforts for freedom brought untold suffering to the Dutch people, it helped them, in one way, by causing people of advanced ideas to seek refuge among them. Thus it was to Holland that the Pilgrims first fled when religious persecution drove them from England; and from time to time large numbers of Huguerots, Germans, and other persecuted people found refuge there. Such people brought new ideas, and had a great influence on the intelligence with which Dutch industries were developed.

Agriculture is the principal industry of the Kingdom. The leading farm products are grains, such as rye, oats, wheat, barley, and buckwhest. Potatoes, sugar beets, beans, pess, and flax are also grown. There

many gardens, including flower gardens where bulbs are raised. The Dutch races such excellent bulbs that they are sold all over the world.

More land is devoted to pasture (F = g. 385) than to all these crops. This is partly because much of the higher land is too sandly for cultivation, and partly because the most ture in the lowlands aids in the growth excellent grass. Cattle, hogs, sheep, and horses are raised in great numbers; and quantities of butter and cheese are made.

Both the Zuider Zee and the North Sea, near at hand. Fishing

n many food fish; and this fact has ishing an important Dutch industry. level a country there can be little power; and little mineral wealth is ind to be expected in a land made turing up of soft clays and sands. A rade of iron ore is found in the bogs, little coal is mined in the extreme ast.

er the circumstances, one might not much manufacturing. Fortunately, or, there is an abundance of coal near Belgium, Germany, and England. of clay, and needing both bricks and tile in their drainage work, they developed manufacturing in these directions. Some of the Dutch pottery, known as Delft ware, is greatly prized for its beauty. In fact, manufacturing now ranks next to agriculture in importance here.

Commerce is highly developed for several reasons. In the first place, the ditches, built for the purpose of drainage, are also commerce useful as canals; and these, together with the rivers, make

1. Easy transportation

1. Easy transportation



Fig. 385. - Cattle feeding in the rich pastures of Holland. A typical Dutch scene.

nce the Dutch people require quanf cloth, shoes, machinery, etc., they both coal and some of the raw mateorder to manufacture for themselves.

rangers who fied to The Netherlands to essecution did much toward developing early turing. Its growth has been further aided forts of the Dutch to reclaim land from the e windmills, with their inclosing buildings, nable not merely as houses, storehouses, and out also for the purpose of grinding grain g other kinds of work. Thus, lacking water he Dutch learned to make some use of wind Besides, in order to build the canals and ad to drain the land, they needed implement as plows and pile drivers, and these nufactured. Again, having an abundance

sections of the country. Furthermore, the flat-topped dikes make excellent wagon roads; and the level nature of the land renders the building of railways a simple matter.

A second reason for the importance of commerce is the position of Holland. This country lies directly in the 2 Position path of entrance to northern of Holland Europe; and it is crossed by the Rhine River, which is navigable for a long distance through Germany. Therefore, much of the American and British trade with central Europe is carried on through Holland.

The Dutch colonies (Fig. 417) furnish &

third reason for the extensive commerce. Since the very earliest times the Dutch have been in close contact with the salt water. Not only have they battled with the sea in reclaiming their land; but to visit some of their near neighbors they have been obliged to go by boat. The men have, therefore, become expert sailors; and when discoveries

Fig. 386. - A canal in the city of Amsterdam.

of new lands were being made, the Dutch sailors naturally took part. This, of course, was followed by the founding of colonies in distant lands.

The attempt of the Dutch to colonize our Hudson Valley was stopped by the English; but Holland retains possession of other important regions. Of these, Dutch Guiana in South America has already been mentioned (p. 248); but the most important Dutch colonies are Java and sev-

eral other East India islands (Fig. 417 _____. The manufacture of raw products obtain _____d from the colonies forms one of the princip ____al industries of the coast cities.

AMSTERDAM and ROTTERDAM are the two principal cities. The former, the large st city in The Netherlands, is about the size of Baltimore.

It is connected with the ocean by canal, and

is noted for its university and museums, as well as for its ship ping, manufacturing, and diamented and cutting. The rulers of Holland are crowned at American although the royal alfamily resides at THE HAGUER, where the government build ings are situated.

ROTTERDAM, next to Amster dam in size, is the chief seapor of The Netherlands. Its location, near the mouth of the Rhine, makes it one of the principal ports for entrance to the interior of the continent. This explains why Rotterdam is the European terminus for some of the important steamship lines from New York and other parts of the world.

2. Belgium (Fig. 416)

In much of Belgium the surface of the land reminds us of Holland. The Comparison of country is low and surface with flat in the northern that of Holland

and western parts, but gradually rises, and grows more rolling toward the south and east. There is much more of this hilly land in Belgium, and the highest point (2230 feet) is more than twice that in The Netherlands.

Although Belgium is even smaller than Holland, its population is much larger, or over seven million. How does Number and that compare with the populacharacter of tion of New York State? Little the people

Belgium is, in fact, the most densely populated country on the earth.

Like the Dutch, the Belgians have endured untold sufferings in their long struggle for independence. Their country has been, to some extent, a battlefield for the larger countries, or Powers, of Europe; for example, the Battle of Waterloo, by which the career of Napoleon Bonaparte was ended, was fought here in 1815.

Belgium, together with parts of France and The Netherlands, once formed the country of Flanders, and nearly half the Belgian people still speak the Flemish language. Since 1830, Belgium has been an independent country, and the present forms of country of count

The intelligence of the Belgians is of the highest order. Even during the Middle Ages their woolen manufactures were the best in Europe; and at various times the kings of England induced Flemish artisans to move to England for the purpose of improving the manufacturing there. Since the Great Powers of Europe have declared Belgium neutral territory, thus prohibiting further fighting there, the people have found it necessary to keep only a



Fig. 388.—A Belgian woman working at the spinning wheel. There is much of this hand work in Belgium.



Fig. 387. - A view in the hilly southern portion of Belgium.

small standing army, and have devoted themselves to the industries. As a result, Belgium has enjoyed a wonderful growth.

More than half the inhabitants are engaged in agriculture, the chief products, besides live stock, being grain, flax, hemp, fruit, and sugar Agriculture beets. Among the farm animals, the Flemish horses are especially noted for their great size and strength.

The Belgian method of farming forms a striking contrast to that in the United States. Instead of farms with from one hundred to several thousand acres, as in our country, the Belgian farms usually contain not more than two or three acres. To a large extent, spading takes the place of plowing; and such hand labor, guided by the experience of many generations, secures large crops of the best quality. In spite of such careful cultivation of the soil, however, there are so many people in Belgium that much food has to be imported.

Quite different from the level northern plain, close set with farms and towns, is the hilly region of the southern mining and angle, covered with forests. manufacturing The weathering of ages, which has worn these mountains so low, has brought to light valuable mineral deposits, especially coal and iron ore. As in England, these two minerals occur near together. Lead, zinc, and silver are also found here; and

there is much quarrying of marble and other building stones.

Belgium, therefore, possesses advantages for agriculture similar to those of Holland, while the minerals give far greater opportunity for manufacturing. These facts help to explain why the population is so dense.

By its position Belgium secures many of the advantages that Hol and enjoys; the is, it is a gateway to and from the interior of Europe. To be sure, its coast line is only about for miles in length and the water there is she low; but ANTWERP has an excellent harb



Fig. 389.—Some of the quaint houses of Ghent facing one of the canals on the low plain of northern Belgium.

More than one hundred thousand men are engaged in mining, and coal and coke are among the leading exports of the kingdom.

The northwest slope of the hilly region is one of the world's busiest industrial regions. As in England, the three most important kinds of manufacturing are cotton, wool, and iron and steel. Linen and glass are also made. The country is so small, and there are so many water ways and railways, that coal is transported cheaply to all sections. Manufacturing, therefore, is well distributed over the kingdom, although coal is found only in the south.

on the broad lower course of the sma Scheldt River.

There is no large river, like the Rhine in H land, but two smaller streams, rising in France, a navigable for some distance across the plain. The is also an extensive system of canals. Besides the water ways, Belgium has more miles of railway, f its size, than any other country. For these resons transportation of goods is one of the leading industries.

The Belgians do not possess such valuable colnies as the Dutch, but they have been prominent African exploration. It was the Belgian king we sent Stanley to Africa, and the Belgian Congonow a Belgian colony.



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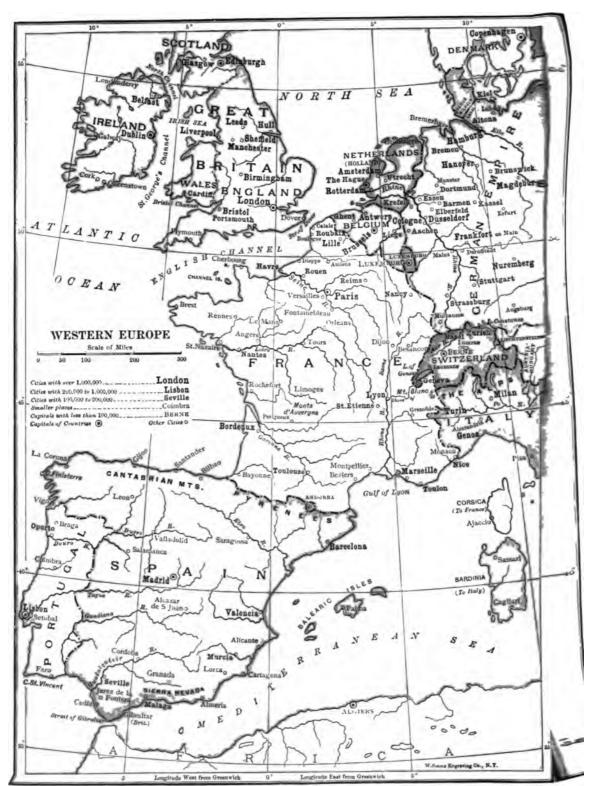


FIG. 390

FRANCE 288

BRUSSELS, the capital and largest city, is situated in the heart of the kingdom. The name Brussels carpets suggests one of its industries; but carriage and lace making are at present among its most important kinds of manufacture. Brussels is an educational as well as a political and commercial center, having numerous picture galleries, museums, and schools.

ANTWERP, next in size, is some distance inland on the navigable Scheldt River. Some of the great steamship lines from New York have their European terminus here, and the port is one of the most important in Europe. The leading kinds of manufacturing are sugar refining, distilling, lacemaking, and shipbuilding.

Many other cities and towns are important manufacturing centers. The largest are Liège, the "Birmingham of Belgium," engaged in the manufacture of firearms, cutlery, glass, and various kinds of machinery; and GHENT (Fig. 389), noted for linen and cotton goods, and for machinery.

3. Luxemburg

On the southeastern border of Belgium is the small duchy of Luxemburg, governed by an hereditary grand duchess and a Parliament. Like Belgium, by agreement of the Great Powers of Europe, it is neutral territory. Agriculture, iron mining, and manufacturing are the principal industries.

The Netherlands. 1. Describe the surface of Holland. 2. How has the lowland been reclaimed?

Review
Questions
3. What about the number and character of the people? 4. Tell what you can about the agriculture;
about fishing. 5. What about mining? 6. Account for the importance of manufacturing.
7. What reasons can you give for the extensive commerce of Holland? 8. Name and locate the principal cities.

Belgium. 9. Compare the surface of Belgium with that of Holland. 10. What about the number and character of the Belgian people? What kind of government have they now? 11. What is the condition of agriculture? 12. Of mining and manufacturing? 13. Of commerce? 14. Locate and state important facts about the cities. 15. Tell about Luxemburg.

The Netherlands. 1. Why are the winds likely to blow with special force and regularity across

Holland? 2. Why is this fact of special value to the Dutch? 3. Find out more about the flower gardens of the Dutch. 4. Have you seen any Dutch pottery, especially Suggestions
Delft wares? 5. Find out why the Pilgrims did not remain in Holland instead of coming to America.
6. Why should not Rotterdam be as large a city as New York? 7. Find out about the Peace Conferences of 1899 and 1907 at The Hague. 8. What reasons are there for selecting a small country like Holland for such a conference, and for making treaties between nations which have been at war?

Belgium. 9. There are greater extremes of temperature in Belgium than in England. Why? 10. Find out some facts about the battle of Waterloo. 11. Give several reasons for spading instead of plowing land. 12. Examine a piece of lace. From what material is lace made, and how is the work done? 13. Towns in Belgium are often known by two names. Why? 14. Figure out the number of persons per square mile (see Appendix, p. 424) in Belgium and compare it with the number in New York, or in your own state.

IV. FRANCE

1. France is the nearest country to the British Isles. Estimate the distance between the two.
2. Compare the two countries as to area. 3. As to population. 4. What countries border France? 5. What waters? 6. In what respects is its position favorable to commerce?
7. What do you observe about the general direction of the rivers? Name them. Locate the island of Corsica, which belongs to France.

The early inhabitants of France, called Gauls, were conquered by the People and Romans, who gave them their government language and many of their customs.

After the fall of Rome, France was divided into independent kingdoms, which were often at war with one another or with neighboring countries. The natural boundaries of France have, however, tended to bring these kingdoms together; for the country is inclosed on two sides by the sea, and elsewhere, in large part, by mountains. Notice how completely the Pyrenees separate France and Spain; and what a barrier the lofty Alps form along the Italian and Swiss borders. Even north of the Alps, a part of the boundary is formed by highlands (Fig. 360).

While the inhabitants were thus partly protected from invasion, there were few barriers within France itself to keep the people of different sections apart. It was not difficult, therefore, to bring the several kingdoms under one rule.

Monaco in the southeast, and Andorra in the Pyrenees (p. 291), are the only exceptions. The principality of Monaco, only eight square miles in area, is a noted winter resort because of its fine climate.

France has changed its form of government several times. For a long time it was



Fig. 391. — A road across the rugged Pyrenees which lie between France and Spain.

a monarchy, and over a century ago it became a republic; but this did not continue long, for Napoleon Bonaparte became so powerful that he was made emperor. There have been other changes since then, the last one being in 1871, when the republican form of government was again established.

As we have seen, the chief highlands of Surface features and rainfall France are in the south and southeast. Among these the loftiest are the Alps, whose

highest peak, Mont Blanc (15,781 fee in France. Since there are no mountai the western part of the country, the winds are able to bear vapor to all par France, thus supplying all sections wi abundance of rain for agriculture.

The position of the highlands is fave to commerce as well as to farming. three fourths of France is a plain, sle westward from the low central plateau. but one of the large rivers rise in plateau, and flow gently across the pla the Atlantic. Thus navigation is pos-

> far into the country. L and name the four la rivers. How does the R differ from the other thre

> As might be expected summers are warmer the England, since Tempera France lies almost entirely south of country, and is less unde influence of the ocean. southeastern section, alth it lies as far north as Bo has a semi-tropical cli (Fig. 392). This is be of the warm Mediterra waters, and the prote from cold north winds affe by the mountains (pp. 26: 283).

> With so favorable a cliand so much level land, F has naturally be- Agricult come a farming 1. Crops

country. Nearly half the people are gaged in agriculture. The same grain raised as in England. What are (p. 265)? Wheat is the most important more of this grain is produced the any other European country exce Russia. Yet France raises only about as much wheat as the United States not nearly enough for the needs of people.

Grapes, not important in the British

FRANCE 285

thrive in the warmer climate of central and southern France. This fruit is the most valuable of all French crops, and more grapes are grown in France than in any other country except Italy. In the Rhone Valley, and on the warm Mediterranean coast, there are groves of olive, orange, and

mulberry trees. The leaves of the latter furnish food for the silkworm (p. 286).

As in England and other countries, the highlands are unsuited to cultivation, and are in large part given over to grazing. As in England, too, there are broad tracts of lowland that are used for pasture. These facts explain why there are more than fourteen million cattle and eighteen million sheep in France.

France is inferior to the British Isles in mineral products. Coal is the most valuable mineral; but while Great Britain, after supplying her many factories, has a large amount of coal left for ex-

Port, France has to import some. The Principal coal beds lie close to Belgium. They are, in fact, a continuation of the Coal deposits of that country. Small coal beds are found at other points, as near St. ETIENNE.

A small quantity of iron is produced, mainly in the northeast near the coal fields. Fine clays for porcelain are found in central France, and building stones are quarried in many places.

In spite of the limited supply of fuel,
France is a great manufacturing nation.

It ranks fifth in the production of silk, second in the production of wine, and there is extensive manufacturing of metal, cotton, and

woolen goods. One reason for these manufactures is the fact that coal is easily obtained, either in France or from Belgium, Germany, and England.

Another reason is found in the nature of the people themselves. Frenchmen have a peculiar appreciation of what is graceful, delicate, and elegant,



Fig. 392.—A view in Nice showing the semi-tropical foliage of southern France.

This is illustrated by the fact that so many of our fashions in dress come from France; and a gown, a pair of gloves, or a hat from Paris is expected to be a trifle more desirable than one bought elsewhere. On this account the French have given much attention to the manufacturing of the finer kinds of goods. Thus their artistic taste has had great influence upon both the kind and amount of their manufacturing.

The northern part of France, including Lille, Roubaix, and Reims, as well as cities near the mouth of the Seine, is the section especially kinds noted for the woolen industry. (1) Woolen and Here coal is most easily obtained; and large numbers of sheep are raised on the hills and plains near by, while foreign wool from Argentina

and Australia is easily imported at HAVRE and at the Belgian port of Antwerp. Remembering that the hosiery, carpets, underclothing, and other goods are of high grade, and such as wealthy people wish, we see that this location, between the two wealthiest capitals of the world, is especially favorable. Next to silk goods, woolen cloths form the most important French export to Great Britain.

There is also much cotton manufacturing near the coal fields of northern France. An



Fig. 393. — Piles of silkworm cocoons ready to be unwound.

important reason for such work in this section is the ease with which American cotton may be imported; and this explains why ROUEN, on the Seine, is a center for cotton goods. There are cotton factories in eastern France, also, where water power is used instead of steam power. Why should you expect water power in that section?

Because the climate and soil of the Rhone Valley are favorable to the growth of the (2) silk manumulberry tree, and because coal mines are near by, this section is a great silk-manufacturing region. Lyon is the center, but St. Etienne and Paris are also noted for this industry. Some of

this manufacturing is done in large factories, some in the homes of the workmen where hand and foot power are used in place of steam.

The traveler in the Rhone Valley sees grove after grove of mulberry trees, carefully tended in order to supply an abundance of leaves for the silkworm to eat in summer. The silkworm moth, at the end of the caterpillar stage, weaves a cocoon about itself. The material of which the cocoon is composed is a thread, about two miles in length, which must be carefully unwound. The single thread is so very fine that, in order to make a fiber strong enough for spinning and weaving, it must first be united with several others.

Since the worms are reared under cover, the silk industry may be carried on in any climate in which the mulberry tree will grow. It is possible, therefore, to produce raw silk in many parts of the world; but the feeding of the worms, and the changing of the cocoons into silk for the market, require much labor, care, and skill. On that account silk production is chiefly confined to those parts of the world where laborers will accept low wages, and where, because several generations of people have done this work, habits of watchfulness and care have been developed. China, accordingly, produces the greatest amount of raw silk; but France, in the midst of Europe, where the market for silk goods is greatest, also produces a large quantity and is the leading country for the manufacture of silk. Make as long a list of articles made from silk as you can.

The extensive cultivation of grapes has been mentioned. Great quantities of grapes are made into wine for export (3) Other or for use in France. In that manufacturing country nearly every one drinks wine at his meals, or wine mixed with water.

The manufacture of steel goods is important in some places, but to no such extent as in Great Britain. Other kinds of manufacturing are mentioned under the cities.

PARIS, the capital of France, is the largest city on the continent of Europe, and the third largest in the world. It Principal cities numbers more than 2,840,000 1. Paris inhabitants.

Paris is situated on the Seine at a point where there is a small island in the river. This island was once a good (1) Importance place for defense, and also of its location an important aid in bridging the river

FRANCE 287

The location is especially

One of the old palaces, known as the Louvre, is to the growth of a large city, for | the most noted art gallery in the world. It contains

reasons. aving a slower han the Rhone, z less subject to s than the Loire, easily navigable other river in Its upper tribuo, bring Paris se touch with 'rance; and, by of canals, there connection with and Saone also, the Rhine in . Furthermore. situated on the de route from literranean to n and central which follows ne, the Saone, Seine. Finally, located in the the most fertile of the country, very far from other densely ed countries. these reasons always been cipal French

nce has already e to the artistic taste of the French. Napoleon er rulers col-; treasures from nations, and museums and

vhich have made Paris famous. plains why large numbers of is go to Paris every year to study

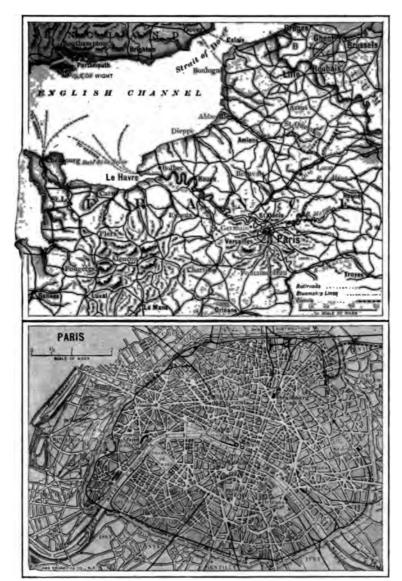


Fig. 394. - To show Paris and surrounding country. Notice how closely the railways follow the stream valleys. Why should they?

thousands of works of art, the most celebrated of all being the marble statue called the Venus of Milo. Among the paintings, one of the most famous is Raphael's "Madonna and Child with St. John," copies of which are often seen in our homes.

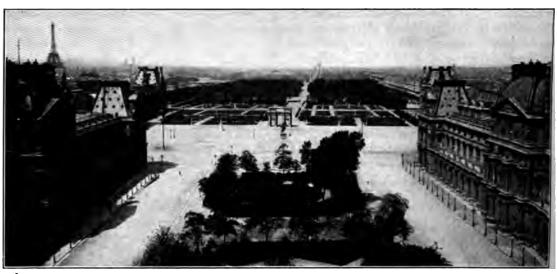


Fig. 395. - A view in Paris showing the broad streets and parks.

Among the many interesting suburbs of Paris is Versailles, where there is another palace that was erected in the days of royalty. It is now used mainly as a museum, and scores of the large rooms are decorated with the finest of paintings. It is among such treasures that the students of art spend much of their time.

It is not strange, therefore, that Paris should be noted, the world over, for its beauty as a city (Fig. 395). The wide streets, the beautiful parks with their fountains and statues, and the fine public

buildings and old royal palaces are wonderfully attractive. Even the dwelling houses are in good taste, for it is required by law that new buildings be so planned as to be in keeping with those near by. Therefore one seldom sees an unattractive building in Paris.

Like other great cities, Paris has many manufacturing industries. The superior taste of the Parisians has led them to pay

especial attention to the manufacture of articles which (3) Its manufacture of articles which (3) Its manufactures with beauty, such as jewelry, furniture, gloves, and fashionable shoes. The Sèvres porcelain is made in the suburbs of Paris; and both this and the Limoges ware, manufactured at LIMOGES, are celebrated for their beauty.

Although so far inland, Paris ships more goods by water than any other French city. (4) Its come. The extensive system merce of canals, by which the country is crossed in all directions, has already been mentioned (p. 287). Vast sums have been spent in dredging the lower Seine, so the



Fig. 396. - Notre Dame Cathedral, one of the most famous buildings in Paris. General view from the river.

FRANCE 289

the depth of water between Rouen and Paris now exceeds ten feet. Small vessels can proceed directly to Paris; but larger ships transfer their goods to trains, or smaller boats, at HAVRE and ROUEN. Railway transportation is also well provided for, since the chief railways of France radiate in all directions from Paris (Fig. 394).

BORDEAUX, on the Garonne River (Fig. 397), in the midst of a fertile grape-raising district, is the chief port for (2) Bordeaux the export of French wines. and Lyon Locate the cities previously named (pp. 285 and 286), and tell for what each is important. Note especially LYON, the center of the silk industry of France.



Fig. 397. - A part of Bordeaux and the Garonne River.

Altogether, therefore, Paris is the political, artistic, manufacturing, and commercial center of France.

HAVRE, which is almost as busy a port as Marseille, has an extensive trade in coffee from Brazil, and in wheat and other materials from the United States. Farther to the northeast is BOULOGNE, where some of the American steamships stop; and

some of the American steamships stop; and not far distant is CALAIS, the nearest port to England, where boats cross the Strait of Dover to England.

The leading seaport of France on the Mediterranean is MARSEILLE, located near the mouth of the Rhone. The delta of the Rhone is too (3) Marseille marshy for a city, and Marseille occupies the nearest point where there is a good harbor and high ground. For many centuries the Rhone Valley was the principal gateway from the Mediterranean to central Europe, and it is natural, therefore, that a city should grow near the mouth of the Rhone River. One route leads to the Seine Valley, and thence to Paris (p. 287), north-

ern France, and Belgium. Another ancient route of travel enters Switzerland past Lake Geneva, out of which the Rhone flows; and still a third route leads, through an opening in the mountains, into the Rhine Valley and Germany.

In spite of the great amount of internal commerce on the numerous rivers, canals, weakness of and railways, and in spite of the extensive foreign trade, France is not a great naval power like the United Kingdom. In fact, France has only one nineteenth as much tonnage as Great Britain, and only nine tenths as much as Norway.

This is not entirely because of lack of acquaintance with the sea, for there are many French fishing and merchant ships. The small number of good harbors, and the frequent and destructive wars during the last century, are among the reasons why France depends so largely upon other nations, such as Great Britain and Norway, for vessels to carry her goods. Why is it safer for France than for Great Britain to be thus dependent?

On the other hand, France has taken a leading part in the exploration and settle-French colonies ment of new lands. You will remember that the French formerly had extensive possessions in North America. Where were they? Where are her present colonies in the New World (Fig. 417)?

In Asia, France holds a part of Indo-China and a very small bit of India; and she owns numerous islands in different portions of the world (Fig. 417). Her most important colonies at present are in Africa, as follows: (1) Algeria and Tunis, across the Mediterranean; (2) a vast area south of these countries, including a large part of the Sahara Desert, the Sudan, the upper Niger, and the country north of the Congo River; and (3) the large island of Madagascar, east of southern Africa.

1. What can you tell about the people and government of France? 2. Locate Monaco and Andorra.

Review
Questions
3. Describe the surface of France; the climate. 4. What about agriculture there? 5. Mining? 6. Why is manufacturing extensive, in spite of lack of fuel?

Tell about the woolen and cotton manufacturing.
 Silk manufacturing.
 Other manufacturing.
 Explain the importance of the location of Paria
 Show how Paris is important as an art center.
 As a manufacturing center.
 What about its commerce?
 Locate and state the important facts about other cities in France.
 What about the weakness of France as a naval power?
 Name and locate the principal colonies of France.

1. What is the name of the president of France?
2. Give reasons why one river, such as the Loirs, might be much more subject to overflows than another, such as the Suggestions Seine.
3. Examine Figure 363 to see if the glacier reached into any part of France during the Glacial Period.
4. Raise a silkworm from the egg. 5. Examine a cocoon, and see if you can unravel some of its thread.
6. Also unravel a piece of silk goods and examine the threads.
7. What influence have the railway tunnels through the Alps probably had upon the commerce of Marseille?
8. The Suss Canal? Why?
9. See if you can find any Sèvres or Limoges ware.
10. Draw an outline of France, with the principal mountains, rivers, and cities.

V. SPAIN AND PORTUGAL (Fig. 890)

1. What cities in the New World are in about the same latitude as Madrid (Fig. 390)? 2. Compare the area of the Spanish peninsula with that of France (Appendix, p. 424). 3. Compare the populations (Appendix, p. 424). 4. Compare the directions taken by the rivers (Fig. 359). 5. Judging from the map (Fig. 390), what about the probable number of good harbors? 6. What has been stated about the temperature and rainfall in Spain (p. 262)? 7. What islands in the Mediterranean Sea belong to Spain?

The people of this peninsula once had much the same rank among nations as is now held by the British. Name Reasons for countries that they controlled. the decline of Now, however, both Spain and these countries Portugal are classed among the weaker nations of Europe.

One cause for this decline is the back-wardness of the people. The mountainous character of the peninsula is another. The various races on the peninsula, cut off from one another by table-lands and mountain ranges, have never been firmly united into one nation with common interests. For centuries they were divided into small, independent kingdoms, but just before the

of America, most of these states ight under one rule; and later ugal was joined to Spain.

al, which is partly separated from deep gorges and canyons, soon ay. Andorra, a tiny country in nees, was never fully conquered, ll independent; and the union of ne others has been by force rather choice. At present Spain is a onarchy; but in 1910 Portugal king away and became a republic.

f the important facts in and Portugal are ds explained by the ent elevation of the the northern boundthe Pyrenees (Fig. tinued on the west ntabrian Mountains, he extreme south are Sierra Nevada ranges }). Between these ntain systems is a steau, two or three feet above sea level, y numerous short ranges (Fig. 360). Ebro Valley on the and the Guadal-

eaning Great River)

the southwest, there are lowlands. these rivers on the map (Fig. he only other extensive lowland is strip near the sea, which reaches he distance around the peninsula. rge portion of the surface, therede up of plateaus and mountains. ghlands have an important in-Owing to the n the climate. elevation of the land, the interior has cold winters, though iers are hot; and because of the mountains, the rainfall is light re except near the northwestern ere the ocean winds lose their in rising over the slopes, and thus indant rainfall (Fig. 365). The southern portion of Spain, like southern California, is in the horse latitudes (p. 209); and here the climate is so arid that irrigation is necessary for agriculture.

The position of the Spanish peninsula, between the two busiest seas of the world, and between Africa and central Europe, suggests that it ence on commight be a natural route for merce commerce between the two continents. But the highlands separate, rather than unite, these regions, so that the Spanish



Fig. 398. — A village on the plateau of Spain.

peninsula has never been a great thoroughfare for the transportation of goods.

There are several other important effects of the highlands. In the first place, the rivers are not navigable; for in descending from the arid plateau their courses are rapid and their volume slight. Besides that, most of them have cut such deep, narrow valleys, like our Western canyons, that they are useless for irrigation and are even a hindrance to travel. The principal exception is the Guadal-quivir, which has a wide valley, and up which vessels are able to go as far as Seville.

Since the interior is so arid and rugged, Spain has little forest, little agriculture, few roads, railways, and canals, and not a dense population. With a few exceptions, therefore, the chief towns are to be found along the coast.

In one respect the elevation of the land is an advantage because it causes great

variety of climate, and hence many kinds of farm products. What countries of Agriculture South America does this condition call to mind?

In such a country we may expect grazing in the uplands and along the mountains; and Spain is, in fact, noted for the excellent grade of its sheep and mules. There are also many cattle, especially in the rainy northwest; but the fact that so much of the country is arid explains why there are many more sheep and goats than cattle.



Fig. 399. — A Spanish peasant bringing vegetables to market in his donkey cart.

The sheep often wander about in large flocks, sometimes as many as ten thousand together, under the care of a number of shepherds and their dogs. In summer they feed among the mountains, but in winter they are driven down to the more protected lowlands for shelter.

Wheat is the most common farm crop in Spain, since it requires little rain; but many of the farmers are so unprogressive that less wheat is raised than might be. In many of the valleys, where irrigation is possible, and on the lowlands along the coast, the farmers are more progressive and prosperous. Barley, rye, and corn are grown, in addition to wheat, and these are among the staple foods of the people. Quantities of grapes are also raised in Spain and Portugal; and

in the southern part of the peninsula the bark of the cork oak is a source of income to both countries.

The arid southeastern coast is wonderfully productive. One reason for this is the warm climate, due to the Mediterranean (p. 262); another is the number of mountain streams, which, though useless for navigation, are very valuable for irrigation. Some of the products of this section, besides wheat and corn, are cotton, grapes, olives, figs, dates, oranges, lemons, and rica.

Several crops of some products may be raised in a year.

The Spanish peninsula is remarkably rich in minerals, lead, silver, copper, and quicksilver, or mercury, being among the m important. Spain produc more quicksilver than any other country, and is exceeded only by the United States in the output of copper and lead. Coal and iron ore are also found in several parts of the peninsula, but the coal is of great value. The iron, wi is mainly found on the north

slope of the Cantabrian Mountains, on in large beds, and is very valuable.

In mining, as in other industries, the progressive character of the people proper development of the resources. It of the benefit from the mines is due to capital and enterprise of foreigners rate than to the Spaniards.

From what has been said above, it is plain that manufacturing does not flourish. This fact is all the more evident when we consider that more than two thirds of the Spaniards and three fourths of the Portuguese cannot read. A nation so backward can hardly be expected to have developed extensive manufacturing. Thus, although they have some coal and could easily import more, much of their iron ore is shipped to the coal fields of

reat Britain instead of being smelted at me. In some places, however, as will be en in our study of the cities, there is exnsive manufacturing.

MADRID, the capital and metropolis of main, has over a half million inhabitants; but unlike most other large spain cities so far studied, it is not manufacturing an important manufacturing center. The reasons for its a are its central location, and the fact

tree, nor fence, nor house; only the weeds and scattered vegetation of an arid waste. One of the most frequented places in Madrid is an enormous building with seats for many thousands, in which bull fighting takes place (Fig. 400). This brutal sport is enjoyed by most of the Spaniards as a baseball or football game is in our country.

Another place of note among the highlands of Spain is GRANADA, the 2. Granada last stronghold of the Moors, who invaded Spain, from Africa, centuries



Fig. 400. - A bull fight watched by thousands of spectators.

at it is the seat of the government. All e principal railway lines crossing the pensula, to connect the coastal cities, conrge at this point.

Madrid, with its wide streets, magnificent royal lace, and one of the finest art galleries in the rid, is in some respects a very attractive city. we surrounding country, however, is far from ractive; for from the streets of Madrid one looks coss the country for miles and miles, seeing not a

ago. To this point among the mountains, at the crossing of the best routes of travel, from east to west, and from north to south, the Moorish people withdrew. Here they were able to hold out against the Spaniards for two hundred years, and the city grew to a population of four hundred thousand. At present, Granada contains less than one fifth as many inhabitants, and its principal attraction is the Moorish palace, or Alham-



Fig. 401.—The Court of Lions in the Alhambra.

bra (Fig. 401), one of the finest examples of Moorish architecture.

On the lowlands west of Granada are SEVILLE and CADIZ, both flourishing cities in former days, when vast stores of plunder

were brought from Spanish colonies in the New World. CADIZ is now a fortified naval harbor; and SEVILLE is re- 3. Other cities covering some of her former in southern commercial importance. It Spain has some manufacturing, especially of tobacco; and in one factory about five thousand women are employed in making cigars and cigarettes.

MALAGA, which has one of the warmest climates in Europe, is engaged in the shipment of wine, raisins, and grapes. Of what grape does the name remind you?

Gibraltar, a steep hill, with bold cliffs rising on nearly all sides, and with a town at its base, has be longed to England since 1704. This hill of solid rock (Fig. 402) is, perhaps, the strongest fortification in the world, and guards the entrance to the Mediterranean. Why should the English especially want such a stronghold here?

On the whole, Spain is poorly provided with harbors; and while the majority of the people dwell near the coast, 5. Principal they take a small share in seaports foreign commerce. BARCELONA and VALENCIA are the leading seaports. BARCELONA, the second Spanish city in size, is the more important port and is a textile manufacturing center as well. The region about Valencia is a beautiful garden, much like that around Los Angeles in southern



Fig. 402. — The rock of Gibraltar, seen from the Spanish mainland.

ornia. The two sections are quite alike in climate and products. Name some see products (p. 131). In addition to roducts of southern California, rice is a on the lowlands near the coast.

only remnants of her vast foreign possessions
ft to Spain are mainly in Africa. These include a few small settlements on the
coast of Morocco; a portion of the
western coast of Sahara, having little
and a coastal strip and a few small islands
Gulf of Guinea. The Canary Islands, west of
thern coast of Africa, and the Balearic Isles,
Mediterranean, also belong to Spain.

BON and OPORTO are the chief cities of gal. The former, the capital and alcities metropolis, is a very beautiful ugal city. It lies on a broad bay the Tagus River enters the sea, and no of the finest harbors in existence. To gives the name to port wine. The part of the Douro Valley is one of the t wine districts in Europe; and Oporto important point for its export.

ugal, like Spain, has lost much of her foreign

y. The Azores Islands, far to the west in
the Atlantic, and the Madeira Islands, to the southwest, are a part of
the kingdom. The Cape Verde Isoff the west coast of Africa, are also dependIn addition, Portugal has large possessions
ica, and some small ones in Asia.

Vhat was the former rank of these coun-State reasons for their decline. 2. State the extent of the highlands. 3. What influence have the highlands on the climate? 4. How do the horse latiffect the climate? 5. Explain the influence highlands on commerce. 6. State the main yout the grazing. 7. Name the farm products. at minerals are found? 9. Why is manufacof so little importance? 10. State facts Madrid and vicinity. 11. About Granada. sate and state the important facts about other a southern Spain. 13. For what is Gibraltar ant? 14. Tell about the principal scaports of 15. Name and locate the colonies of Spain. sate the principal cities of Portugal, and tell at each is important. 17. What colonies has

about what portion of the boundary line n Spain and Portugal is formed by rivers?

al?

2. What must be the influence of railways upon the old-fashioned methods of farming in the interior of Spain? 3. Look in the report of the United States Census to see what per cent of our population cannot read. 4. Learn what is meant by the Pillars of Hercules. 5. Find pictures of Moorish architecture. 6. Read Washington Irving's "The Alhambra." 7. Make a sketch of the Spanish peninsula, including the principal mountains, rivers, and cities.

VI. NORWAY, SWEDEN, AND DENMARK (Fig. 358)

1. The Scandinavian Peninsula is the largest in Europe. What is its length in degrees (Fig. 358)? In miles? 2. How does its western coast remind you of the western coast of Scotland and Ireland? 3. What proofs do you see of glacial action? Where? 4. What do you observe about the rivers of Sweden? 5. Which of these three countries has the largest population? 6. How does it compare with New York State in area and population? With your own state? (See Appendix, pp. 424 and 425.) 7. What points in North America have about the same latitude as Christiania and Stockholm? 8. On Figure 312 find how near to Scandinavia the west wind drift reaches. 9. Locate Denmark; point out the islands that form a part of the country. 10. At the entrance to what sea does Denmark lie?

These three countries have long been more or less united. The reason for this is that the best settled parts are People close together and not sepa-1. Their related by any important barrier. tion to one Most of the inhabitants of Norway and Sweden live in the southern part of the Scandinavian Peninsula, with no natural barrier between them; and only a narrow, shallow sea separates Scandinavia from Denmark (Fig. 416).

The people of the three countries are descended from a common stock, and at times have had a single government, though now independent of each other. Therefore they have many interests in common. The written language of the Norwegians and Danes is still the same, and, until recently, Norway and Sweden were united under one king. At present each country is a limited monarchy.

These people have been closely connected

with our own history, for they made some of the early invasious and settlements in Great 2. Their relabilities. Britain, and thus are to be tion to us numbered among our ancestors. Their daring seamen reached Greenland, by way of Iceland, and discovered America nearly five hundred years before Columbus visited it. During the last century they have migrated to the United States



Fig. 403. - Peasants of Norway in their native dress.

by thousands, and have chosen homes in many states.

In these three countries together there

Some reasons are only about one fourth as for the independence of these countries

These countries are only about one fourth as many inhabitants as in the much smaller British Isles. Yet in spite of frequent European wars, they have remained independent through many centuries.

This has been possible, in part, because of their peculiar position. The only ap1. Their position proach to Scandinavia by land tion is through Lapland in Russia, which is so far north that it has a very cold climate. Thus the peninsula is almost as isolated from other nations as is Great Britain.

The peninsula of Denmark, on the other hand, is partly connected with Germany (Fig.

416). However, the islands, which are the most important parts of Denmark, are completely cut off from neighboring lands. Standing, as it does, at the entrance to the Baltic Sea, Denmark guards the approaches to this inland sea. Both Germany and Russia have long coveted little Denmark on this account. But since neither of them has been willing that any other Great Power should hold it, Denmark has remained free. Thus the very importance of its position has protected it.

The rugged surface and severe climate of Scandinavia have likewise protected it fr ∞m invaders. From its southern g. Their rugged to its northern end, the penin- surface and sula is mountainous, for it is an vere climate ancient mountain land (p. 257), much wo rn, and crossed by deep valleys. Some pezzks reach an elevation of six to eight thousand feet; but most of them are lower and rise to nearly the same height, giving to the 12P land the appearance of a plateau. mountains descend steeply into the ocean on the western side, so that, in all but the southern part, Norway is a narrow, mountainous country crossed by short streams flowing in deep, steep-sided valleys. The boundary between northern Norway a rd Sweden follows the divide between the east- and west-flowing streams.

Although Denmark has no mountain much of the land is sandy and barren. That all three of the countries have a severelimate is shown by the fact that even Denmark, the most southerly, lies about as far north as Scotland.

The west winds that blow from over the warm ocean exert a great influence here, as in the British Isles. Most of the agricult. Norway, however, is too rug- ral districts ged and cold for farming. Out of a total area of about one hundred and twenty-four thousand square miles, less than four thousand have a soil and climate suitable to agriculture or pasturage. Sweden has much and the low land, because the slope on the east side of the mountains is much the

. Yet these lowlands are so far and so cut off by the mountains he influence of the sea, that agriculof little importance anywhere except southern half of the country.

northern and western portion of the peninsula, called Jutland, is a sandy

Therefore only the islands and the astern part of Jutland are very pro
3. As a result of these conditions,

ount of land suitable for ture in the three counvery small. The best s are near together in rn Norway and Sweden eastern Denmark.

e Norway has so little nat is suited to farming or pasturage, the es and amount of stock Norand grain produced is small. Therefore, much meat, flour, and food must be imported. are some silver and mines, but coal is y lacking. Manufacturerefore, is not greatly Even the fine ped.

power is little used, because raw prodr manufacturing are not abundant. what, then, do the two million Noris depend for a living? They have two very valuable resources, bree - lumber and fish. adna-More than one fifth of the country is covered, pine being the most comee. As in Maine, the rapidly flowing are of use in moving the logs from est, and also in supplying power for wmills and planing mills. Lumber, n goods, and paper are the most imt exports of the country.

abound on the shallow banks along egular western coast, especially codthe neighborhood of the far northern on Islands. The North Sea, with its

many fish, is also close at hand, and the Arctic Ocean with its seals and whales. Over a hundred thousand Norwegians are engaged in the fishing industry. Along the fiords every family owns a boat, and knows how to make one as well as how to use it. While the men are at sea, the women work the small farms or garden patches.

Centuries of experience in navigating the



Fig. 404. — Laplanders who live, mainly by fishing, in northern Norway.

deep fiords, and in fishing, have bred in these people a love for the sea, which has given rise to a third great industry,—that of carrying goods for other nations. The timber for wooden vessels is easily supplied, so that they can be cheaply built. At present this small Norwegian nation has a greater number of freight vessels than any other European country except the United Kingdom.

All these facts together explain why the Norwegian towns lie along the coast. Indeed, it is rare to find even a village in the rugged interior.

Christiania, the capital and largest city, is situated at the head of a long, narrow bay, which makes an excellent harbor. This city is the principal seaport and dis-



Fig. 405. — A view in one of the grand fiords of Norway.

tributing center for southern Norway. BERGEN, the next city in size, is an important fishing port, like Aberdeen in Scotland, and Gloucester in Massachusetts.

A sinking of the Scandinavian peninsula has caused the sea to enter the deep mounscenery on the tain valleys, forming many western coast bays, peninsulas, and islands.

It is estimated that there are fully ten thousand islands along the coast of Norway; and there are hundreds of bays and peninsulas.

The long, narrow bays, inclosed in steep mountain walls, are called fiords (Fig. 405). Some of these extend fully ninety miles inland. The cliffs are often only barren rock; but here and there, where the slopes are not too steep, green forests cover the surface. Glaciers are frequently in sight; and waterfalls abound on every hand. In some places the swollen streams from the mountains plunge downward for a thousand feet or more, over the nearly vertical cliffs which bound the fiords.

Here and there, upon a level patch, a hamlet of fishermen's homes is seen. These hamlets are usually upon the deltas of small streams and are connected with the outer world, and with other villages, by no road or pathway except the waters of the fiord. So isolated are these hamlets that each man must learn to do many things,—farm, fish, tan his leather, make his shoes, build his boat, his house, etc.

Every summer hundreds of visitors, from all parts of the world, travel by steamer along this coast to enjoy the beautiful scenery. Another attraction is the sight of the sun at midnight (Fig. 406). At Bergen, Christiania, and Stockholm, which are in nearly the same latitude, the shortest night is less than six hours; at Trondhjem it is about four; and at Hammerfest (Fig. 358), north of the Arctic Circle, and near North Cape, the sun does not set from May 13 to July 29.

Agriculture is the leading industry of Sweden. Here, fertile soil, swept from the highlands by the glacier Industries (Fig. 363), has been scattered of Sweden over the lower lands. This 1. Agriculture gives to the southern part of the country much the same appearance as New England presents. Oats are raised in greatest abundance, but rye, barley, wheat, and potatoes are also produced. In addition, much live stock is raised, and butter is exported.

A large part of the land that is too barren and rocky for farming supports a growth of timber.

Nearly one half the area of Sweden is



Fig. 406. — The midnight sun at North Cape, the northmost point in Norway.

covered with forest, and lumber is the principal export, as in Norway. Indeed, these two countries supply much of the lumber used in western Europe.

Mining is the third important industry.

There are silver and copper mines; and a

3. Mining and small amount of poor coal is
manufacturing found in the south. Sweden
has long been noted for its iron ore, but
since there is no good coal for smelting it,
there is little iron manufacturing. However, some of the iron ore is smelted by the

use of charcoal, and some by the use of coal brought from other countries. The Swedish iron is of such excellent quality that much of it is shipped to Sheffield, in England, for use in the manufacture of the highest grade of steel tools.

Sweden possesses excellent water power for various kinds of manufacturing, and some of the numerous rivers are used as a source of power. Manufacturing, by use of water power, is making rapid Progress here.

The two principal cities— Stockholm, the capital (Fig. Cities of 407), and Goth-

Sweden ENBURG—are on the coast; but there are other small seaports and inland mining towns. The situation of Stockholm is one of great beauty. It is on an excellent harbor; and is connected by lake, canal, and rail with the chief points in the country, including Gothenburg. It is the principal distributing center for imports, while Gothenburg is the leading center for exports. The fact that the harbor of Stockholm is blocked with ice for four months each year, while that of Gothenburg is rarely frozen, gives the latter city one advantage as a shipping point.

The principal foreign trade of both Norway and Sweden is with Great Britain.

Give reasons for this. What must be the main articles of import and export? Next to Great Britain comes Ger- Foreign trade many. Can you suggest of Norway reasons for this?

Farming, especially dairying, is the chief industry of Denmark. In this small country there are over a million and a half dairy cows and about half as many Industries of sheep, besides large numbers Denmark of horses, goats, and pigs. 1. Agriculture Butter forms one half the exports of Den-



Fig. 407. - A view of Stockholm.

mark. The laws of the nation discourage large farms, so that, as in Belgium, by carefully cultivating a small patch of land, each farmer obtains the most that the soil can yield.

The nearness to good fishing has naturally made fishing important; but the fisheries of Scandinavia are of far greater value than those of commerce, and Denmark. The Danes have much commerce, and some of the men serve as sailors on the ships of other nations, though to a far less extent than the Swedes and Norwegians.

There is neither coal nor metal in the rocks of Denmark, so that there is no mining in the country. The only mineral prod-

uct of value is clay. As in Ireland, the lack of coal for fuel is partly met by peat from the bogs and swamps.

The position of Denmark, on one of the leading highways of European commerce, s. Manufachas brought its people into close contact with the rest of the world. The Danes are a very highly educated people, and have much manufacturing. In spite of their lack of raw manufacturing.



Fig. 408. — A scene in Copenhagen.

terials, they make machinery, ships, beautiful porcelain, and many other articles.

As in the case of Norway and Sweden, the principal foreign trade of Denmark is

Foreign trade and leading city of Denmark
mark with Great Britain. Therefore one might expect to find an important seaport on the western coast; but that coast is so low,

and so shut in by sand bars, that good harbors are lacking. In fact, in all Denmark the only harbor that admits large vessels is COPENHAGEN (meaning merchants' harbor) on Seeland Island. Since this point guards the entrance to the Baltic Sea, there is a double reason why Copenhagen is the principal city of Denmark. The fact that it is the capital also increases its importance.

The daring Norwegian sailors of early times, called Norsemen, explored many lands, and had colonies even before other countries of northern Europe. When

Norway and Denmark separated, these colonies remained a part of the latter country. Although some of these have been lost, Greenland (p. 170) and the Faroe Islands are still Danish colonies, and Iceland is a Danish dependency. In the Faroes, a score of small islands north of Scotland, the principal products are sheep and fish. Denmark also owns three islands—St. Croix, St. Thomas, and St. John—in the West Indies. From these, sugar and tropical fruits are obtained.

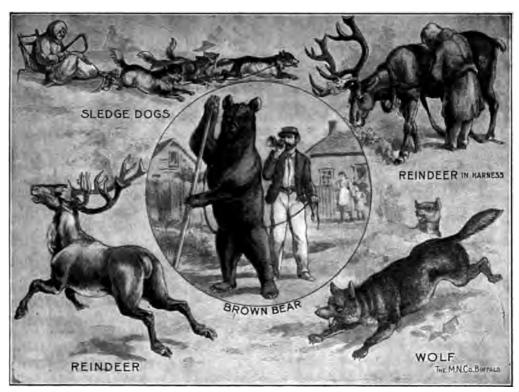
Iceland, which is larger than Ireland, and more

than twice the size of Denmark, is an island of volcanic origin. Over a hundred volcanoes are found there, twenty-five of which have been in eruption in recent times. Hekla is one of the most noted of these. Destructive earthquakes are common, and there are also geysers similar to those found in our Yellowstone National Park. The interior is a desert plateau, in part covered by glaciers, and hence not inhabited. Near the sea, however, there is some good pasture land, and the people are mainly engaged in raising sheep and in fishing. Eider down, from the eider duck, is one of the important products of the island. The people are highly educated. What is the capital of Iceland?

1. What relation have the peoples of these three countries to one another? 2. How have they been connected with us?
3. How has the position of these countries helped to preserve their questions

3. How has the position of these countries helped to preserve their independence? 4. How have their surface and climate helped toward the same end? 5. Where are the principal agricultural districts? What about theia extent? 6. What are the less important industries Norway? 7. The three leading industries? 8. Nam and locate the cities of Norway. 9. Describe tescenery on the western coast. 10. What about scenery on the western coast. agriculture in Sweden? 11. Lumbering? 12. Min. ing and manufacturing? 13. Name and locate the chief cities of Sweden. 14. What about the foreign trade of Norway and Sweden? 15. What are agricultural products of Denmark? 16. State th principal facts about the other industries. 17. Te about the foreign trade and leading city of Denm 🗪 18. Name and locate the colonies of Denm 19. What are their principal products? 20. S the principal facts about Iceland.

1. Why should the telephone prove of special portance among the fishing towns scattered along the coast of Norway? 2. By use of a globe explain why the sun



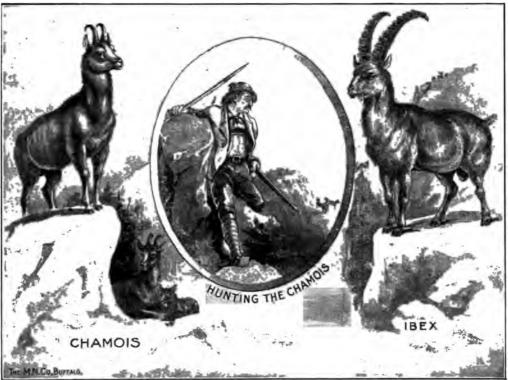


Fig. 409. — Some of the native animals of Europe.

not set for weeks at a time at Hammerfest. 3. Why should Bergen be one of the rainiest cities of Europe? 4. Give reasons why harbors on the Baltic are blocked by ice much oftener than those on the western coast of Norway. 5. Find out about the early Norse explorations of North America. 6. Hans Christian Andersen was a native of Denmark. What fairy stories do you know that were written by him? 7. Read and tell stories of the Norse gods in old-time mythology.

VII. RUSSIA (Fig. 358)

1. About how much of Europe is included in Russia (Fig. 358)? 2. What part of the distance from pole to equator is included?
3. What does this suggest concerning climate? 4. How much of the boundary of



Fig. 410. — The city of Moscow, situated in the midst of the vast, level Russian plain.

Russia is seacoast? 5. Name the seas which border it. 6. Name the mountains on or near the border. 7. What portion of Russia is occupied by plains (Fig. 360)? 8. In what directions do the large rivers flow? Name the three longest. 9. Is there any outlet from the Caspian Sea? What does that fact suggest? 10. Find Poland, Finland, and Lapland. 11. What parts of Asia are in the Russian Empire (Fig. 455).

Russia in Europe is as large as all the Its size and other European countries toposition gether; and the Russian Empire, which includes Siberia and other lands

in Asia (p. 352), occupies about one si all the land upon the globe. What tries in North and South America app European Russia in area? In varie climate?

In spite of its vast extent, the dement of Russia has been greatly hin by its position, which causes a la good harbors. In this respect it constrongly with the United States. Is sure, the sea forms a large portion of Russian boundary; but Archangen principal port on the White Sea, is bound for nine months, and the I ports for four or five months, each

while the entrances to Baltic and Black seas guarded by foreign na Why are the Caspian of no use for foreign merce?

Most of the large riv western Europe have sources in the surface mountains. Give features examples (Fig. 359). not so, however, in R where the central divide low, hilly region, less twelve hundred feet a sea level at its highest p Except for the mountai and near the border o country, this is the hipart of Russia.

From what has been so is easily seen that most of Russia is markably level plain (Fig. 410). several of the rivers are very long, must be true as to the swiftness of currents? What, then, must follow their value for navigation? What the ease with which canals can be buil

In southeastern Russia, on the hand, are the lofty Caucasus Mour (Fig. 361), one of whose peaks, the er volcano Mount Elburz, is the highest r tain in Europe. At the very base of

RUSSIA 808

ering the Caspian Sea. In some places Linese plains are even below sea level.

The great distance of Russia from the Atlantic Ocean, over which the west winds blow, has had an important **Climate 1** Temperature effect on both the temperature and rainfall. For example, Moscow is in the same latitude as Edinburgh; but while at Edinburgh the average temperature for January is 37°, at Moscow it is nearly 25° colder. What effect must this cold have napon navigation of the rivers? Notice which isotherms pass near Moscow and Edinburgh in July (Fig. 317). From this ou see that, though the winters are colder, the summers are much warmer in Russia than in Scotland, in the same latitude.

There is far less rainfall in Russia than in Scotland. In the eastern part of the country there is an average of less than twenty inches a year (Fig. 365). Since this amount is barely enough for agriculture, the crops often suffer, and famines follow in especially dry seasons. Southeastern Russia is in the belt of the horse latitudes, and is so far from the Ocean that it is too arid for farming without

The Caspian Sea, into which the longest river of Europe pours its floods, is the largest inland sea in the world. In spite of the enormous volume of water which enters this sea, the evaporation in that dry climate has caused it to shrink in size until it is no longer connected with the ocean. The same is true of the Aral Sea (Fig. 455). There is so much evaporation in this region that the surface of the Caspian Sea is eighty-five feet below sea level.

irrigation.

Russia may be divided into several belts,

according to climate. In the north are the
frozen tundras, even in summer
too cold for agriculture. The
scattered Laplanders, who live
pon the tundras, have habits resembling
those of the Eskimos.

South of the tundra belt the warmer climate permits the growth of forests, including such trees pine, fir, oak, beech, and birch. Some

of this timber has been cut away, and farms have taken the place of forests; but much woodland still remains.

The forest belt is gradually replaced on the south by open, grass-covered plains similar to those of the central (3) Grassy and western parts of the United plains and arta States. This is the best agristeppes cultural region of Russia, and here grains are raised in enormous quantities, especially in the "black earth" section where the soil is fine-grained, black, and very fertile. The climate of the grassy plains gradually becomes more arid toward the south and east, until on the steppes, which resemble our Western arid lands, farming without irrigation is impossible.

In the extreme southern part of Russia, near the Caucasus Mountains, there is abundant rainfall; and, being so (4) The Caucafar south, the crops of warm sus region temperate climates are raised, but around the Caspian Sea most of the land is a barren desert.

The plains of Russia have offered no barrier to invasion. Therefore, many different peoples have come to this People region from various directions, 1. Races and and they are now united under languages Russian rule. Most of these belong to the white race, though to a different division from the German and British peoples. These Russians are Slave, while the inhabitants of Germany, Scandinavia, and the British Isles belong to the Teutonic division of the white race. Russia also contains many Jews, Teutons, and other people, including Lapps (Fig. 404) and Finns, both of whom are classed with the Mongolian race. All together, not fewer than forty languages are spoken within the realm.

In former centuries, while other parts of Europe were advancing in civilization, Russia was still being raided by hordes of outsiders.

The country was so far away from western Europe that it felt little influence from the growing civilization of the West. Moreover, approach by water was then even more difficult

than now, for at that time the only seacoast that Russia owned was on the Arctic Ocean. It was not until the time of Peter the Great (1682-1725) that Russia began to learn the lessons of civilization from other European nations.

These facts help to explain why Russia is so slightly advanced in some directions. While the common people of other European nations were demanding greater liberty, and were steadily gaining education, the masses of the Russians were kept in poverty and ignorance. They were mere serfs, who were little better than slaves to their lords,



Fig. 411. — A family of Russian peasants.

the nobles. The serfs were freed in the middle of the last century; but, even now, little attempt is being made to educate the masses, and they have little liberty.

The emperor, or Czar, is an absolute monarch, "whose will alone is law." In Government purely local matters, however, the peasants have a voice. Those of each locality meet in a Mir, or assembly, to discuss matters of common interest and to elect officers from their number, somewhat as is done in town meetings in the United States.

Many of the Russians have long been dissatisfied with this form of government, and have demanded that the people be given more power. At last the Czar has allowed the people to elect a national body of representatives, called the *Duma*. They are, however, able to do little beyond what the rulers allow, and there is still much complaint.

Nearly a third of European Russia is forest-covered; and, as in Norway (p. 297), timber is one of the leading Lumbering resources. Many fur-bearing and fishing animals live in the forest, and Russia, like Canada, exports large numbers of valuable furs.

Fishing is an important industry in Rus-

sian waters, and the varieties of fish resemble those of Norway and Sweden. There is a special demand for fish, owing to the number of fast days kept by the Græco-Russian Church, to which the majority of Russians belong.

Both in the forest region and on the open plains to the south, there is extensive Agriculture agriculture. Fully 1. Farming nine tenths of the people are supported by farming, which shows that Russia is mainly an agricultural country.

The most important crops are the grains, especially rye, wheat

barley, and oats. Russia ranks next to the United States among the grain-producing countries of the world, and wheat is one of its principal exports. Another important crop is hay; and potatoes, sugar beets, and flax are extensively raised in the cool temperate climate. In southern Russia the ewarm climate permits the culture of grapes, tobacco, and corn; and south of the Caucasus even olives and cotton are grown.

On the grazing lands of the arid steppes many sheep, cattle, and horses are raised. The nomadic herdsmen still retain many of the customs of the shepherds and herders of Bible times who dwelt farther south in Asia. This the home of the Cossacks, a people of Tares.

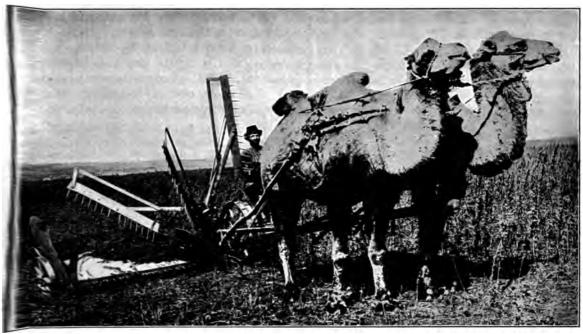


Fig. 412. - Harvesting wheat with camels in southeastern Russia.

escent noted for their skill as horsemen and for their fierce bravery.

Some parts of Russia contain mineral deosits of great value. In the Ural Moun- by hand, in the homes of the workmen.

tains, for example, are gold, silver, copper, and platinum, besides some precious stones and graphite, or "black lead," used in lead pencils. Coal and iron are unined in several parts of Russia (Fig. 362), and each year the amount is increasing. As in Great Britain, some of the iron ore is so near coal and limestone that it is easily smelted.

Russia ranks next to the United States in the production of petroleum. This oil is found in several places, especially about BAKU on the Caspian Sea. Large quantities are consumed as fuel for steamers on the Caspian and Volga; and, as in California, the oil is used in locomotives.

Numerous factories have recently been started in Russia, but most of the manufacturing is still done by hand, in the homes of the workmen.



Fig. 413. - A Russian peasant girl harvesting wheat by hand.

What a contrast to the United States and to Great Britain! Distilling and brewing, cotton manufacturing and sugar refining, are the principal forms of manufacturing carried on in factories; flour mills, woolen and



Fig. 414. — A Græco-Russian church in Moscow.

linen factories, and iron works rank next in importance. What raw products of Russia encourage these industries?

For a long time the principal cities of Russia were situated far in the interior. Principal cities This clearly shows how little 1. Moscow and Russia was in touch with other Nizhni Novgorod countries. For example, Moscow, the second city in size, and once the capital of the empire, is located almost in the center of the realm, as Madrid is in Spain. The point was well chosen, because rivers, which could easily be connected by canals, diverge from this section in all directions. By the introduction of railways the advantage of this central location was so increased that Moscow is now the leading

railway center of Russia as Madri Spain, and for the same reason. Stareason (p. 293). Unlike Madrid, t round about the city is fertile and populated. All these advantages has

Moscow one of the chief facturing centers of the em

Moscow is adorned with royal government buildings, and churc. 414). It is the holy city of Russ the center of the Græco-Russian The University of Moscow, the 1 the empire, is attended by ab thousand students.

East of Moscow, on the Volg is NIZHNI NOVGOROD, renowned yearly fairs. For centuries a gr center has been needed, somewher vicinity, for the exchange of As Russian products. This city 1 excellent water connections tha served as that center. On the n 858) point out these connection fairs, held in August and Septer the greatest in Europe, and a many as two hundred thousand each year. In a single season goo changed to the value of nearly \$200 and prices are fixed on crops a materials for the coming year.

While the two cities justified are very old, their justified in the interior is not 2. St. favorable for com-burgs

merce with distant nations. It w fact that led Peter the Great, in to found St. Petersburg at the I the Gulf of Finland. The site ch very marshy, and the climate i foggy, and unhealthful. Moreovarm of the sea on which the located is so shallow that a ship twenty miles in length has been no in order to connect it with the water farther west. In addition, t bor is ice-bound for more than four each year.

Yet, in spite of all these disadve St. Petersburg is the largest city i sia, and the fifth in size in Europe growth is partly due to the need of RUSSIA 807

Port in this section, and partly to the fact that the city is the capital of a great empire. More goods are shipped from this Point than from any other Baltic port. Righ, to the southwest, has about half as much shipping.

St. Petersburg is a well-planned city,



Fig. 415. - A Russian sleigh in St. Petersburg.

having especially wide streets, splendid buildings, and fine residences.

Odessa, another important seaport, was founded a little over a century ago, when

Russia gained possession of the northwestern coast of the Black Sea. Besides being the chief outlet for the vast grain trade of southern Russia, and the principal port on the Black Sea, Odessa is an important flour-milling center, like Minneapolis.

Thus far the Russians have not found it

Possible to obtain possession of Constanti
nople, although they have, no doubt, felt many a yearning in that direction. Why? They have, however, extended their territory in other directions. For example, they have sained much land in central Europe. At one time there was a powerful kingdom here, called *Poland*, but this was divided

among Russia, Austria, and Germany. Russia obtained the largest share, and in this portion are situated WARSAW and LODZ, two of the leading cities in the empire. The former is a center for the railways that connect Russia with western Europe, and the latter is an important manufacturing

city. Much coal and iron are mined in this vicinity.

Finland, whose capital is Helsingfors, although a part of the Russian Empire, has a measure of independence. It has a parliament which makes its laws, but the Czar has the right of veto upon them. Unlike the Russians, most of whom belong to the Græco-Russian Church, the Finns are mainly Protestants, belonging to the Lutheran Church. They are a nation of highly educated people. But it has been the policy of the Russian government to destroy their existence as a nation. On account of mistreat-

1. Show how large Russia is. 2. What about its harbors? 3. De-

ment from the Russians, many Finns and Poles have migrated to

scribe its surface. 4. What can you say about the temperature?

5. The rainfall? 6. Into what climatic belts can the country be divided? 7. What different races are found among the Russians, and how many languages are spoken by them? 8. Why have they not advanced further? 9. What is the condition of the government? 10. Tell about lumbering and fishing. 11. What are the agricultural products? 12. The unineral products? 13. What is the condition of manufacturing? 14. Locate and state the principal facts about Moscow and Nizhni Novgorod. 15. St. Petersburg and Riga. 16. Odessa. 17. Warsaw and Lodz. 18. Finland.

the United States.

1. Compare the area of the Caspian Sea with that of Lake Superior. 2. Read about how the inhabitants of Moscow burned their houses in 1812 rather than give shelter to Napoleon's army. What followed? 3. What must be some of the difficulties connected with building good wagon roads in southern Russia? 4. What did Kosciusko, the Pole, do to make his name memorable to Americans? 5. Have you read the story of Thaddeus of Warsaw? If so, what can you tell

about it? 6. Read how Peter the Great wandered through European countries, as a common workman, in order to learn Western customs. 7. Make a sketch map of Russia, with principal rivers and cities. 8. Compare Russia with the United States in area and population (Appendix, pp. 424 and 426); also in degrees of latitude contained.

VIII. GERMAN EMPIRE

1. Compare the latitude of Berlin with that of London (Fig. 358). 2. Of New York. 3. Estimate the greatest length of Germany from east to west (Fig. 416); from north to south. 4. How does it compare in size with the British Isles? With Russia? 5. What parts of the boundary are natural? 6. Point out the principal rivers. In what direction do they flow? 7. Is most of the surface plain or mountainous (Fig. 359)? Where are the mountains? 8. What facts do you notice about the coast line? 9. Is the North Sea, or the Baltic, the more desirable place for seaports? Why?

The position of the German Empire is strikingly different from that of Great Position, and Britain. Only about one third its advantages of its boundary is water, while it borders upon seven independent countries, besides Luxemburg (p. 283). What are their names?

The location of the British Isles is favorable for world commerce, because densely populated Europe lies near at hand on one side, while the New World lies across the ocean on the other side. Germany also has great advantages in her location. Because it is so central, most of the markets of the continent are at her very doors, while two of her principal ports, HAMBURG and BREMEN, face Great Britain and the west. Name some of the large European cities (Fig. 358) that can be quickly reached from Germany. In these days of railways, Germany's central position is superior to that of England for European trade.

It has required a long struggle to bring under one rule the various people living within the bound-the empire; present area and population For centuries there were many separate states in central Europe

with a German-speaking population; and although they were loosely held togethed by a confederation, they were often at was with one another. Their condition was in some respects, similar to our own justfer the Revolutionary War. During the War of 1866, Prussia and Austria, the principal kingdoms of the German Confederation, fought for leadership. Pruss proved successful, and Austria withdrefrom the union. In 1871, under the leas of Prussia, the German Empire, with its present boundaries, was established.

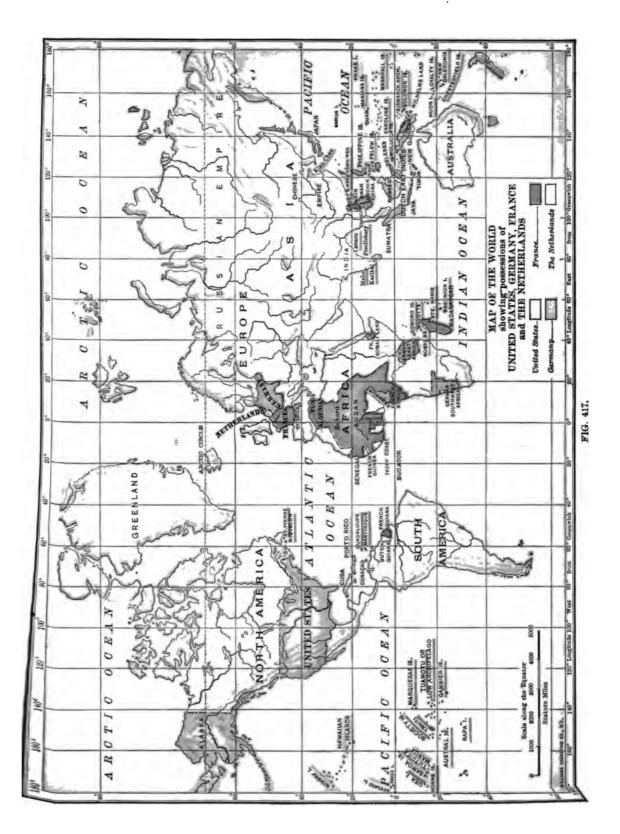
It contains nearly two hundred and nir thousand square miles, being a little large than France, and twice the size of Colorade But it has nearly sixty-five million inhabitants, or about eighty-one times as man as Colorado, and twenty-five million morthan France.

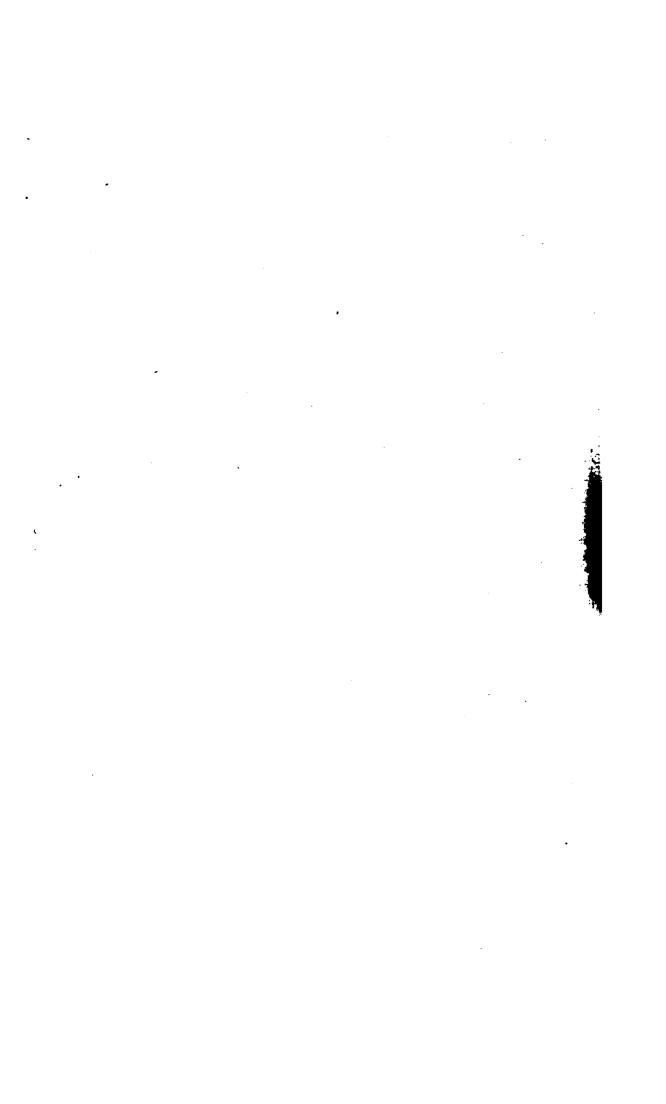
All together there are twenty-six state within this empire, some of them bein kinydoms, some duchies, and some merely free towns. The smallest is the Free Town of Bremen, whice includes only ninety-nine square miles, and two hundred and ninety-eight thousand in habitants. The largest is Prussia, whose area is more than half that of the entire empire, and whose population is about five eighths that of all Germany.

These states are united under a centrauthority, more closely than our states. I place of a President they have an Empero the King of Prussia being by law the Enperor of Germany; and their form of goverment is a limited monarchy. The powof the German Emperor is, however, mugreater than that of the British Kin though far less absolute than that of the Russian Czar.

In a war with France, in 1870, the Ge mans defeated the French, and seized son French territory west of the why the Rhine, called Alsace-Lorraine, boundary is in which Metz and Strassburg irregular are situated. Much of Germany's irregular frontier has been determined in a simil

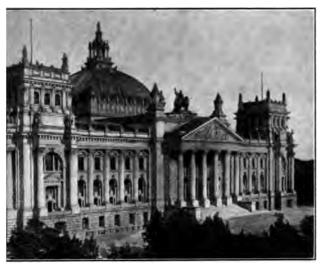






Mountains form the southern bounda great extent, and water the northnut the eastern and western limits, decided by war, do not follow any l barrier. Draw an outline map of ny, to show this boundary line. rder to hold her present boundaries, ny must be prepared to defend them ion for at any time. This need calls of the many citizens to an occupation

which we have not thus far con-; namely, that of *preparing for war*.



18. - The building in Berlin where the German Parliament meets.

of the great European nations is jealvatching the others; and since no one hows how soon a dispute may arise is neighbor, each keeps a large and ghly prepared army. It is the object nation to be so dangerous that others ar to offend or attack it, and, if a war arts, to gain the victory.

such reasons, all able-bodied young men in y are required to devote usually two full nd parts of several following years, to active training. Most of them enter the service it the age of twenty; and as some five I thousand men fit for military service reach every year, one can gain an idea as to what sparation costs.

ng times of peace, the German army contains ix hundred thousand soldiers; and the Ger-

man navy calls for many men besides. All these men are, for the time being, withdrawn from the industries, so that the nation loses the fruits of their labor for that period. Is this an advantage to a nation?

Strong forts are built near the boundary, as at Cologne, Metz, and Strassburg on the French side, and Königsberg and Posen near Russia. Forts are also numerous in the neighborhood of the great interior cities, and at other important points. The cost of these strongholds, with the vast sums of money required to keep up the army and navy, makes a heavy drain upon the nation.

Germany is not unlike other leading European

nations in these respects. As already stated (p. 275), the British, having no close neighbors, rely mainly upon their powerful navy for defense. Every one of the Great Powers demands the service of many men, and expends large sums of money either for the army, or navy, or both. In fact, preparation for war is one of the great occupations of Europe to-day.

Germany includes two quite different kinds of land. The southern section Surface is mainly a refeatures gion of ancient 1. The highmountains, worn lands down to low relief like the mountains of Great Britain and New England. It is, in fact, a somewhat irregular

plateau, from one to two thousand feet in height, with some ranges rising high enough to be called mountains (Fig. 419). Only in the extreme south, on the edge of the Alps, is a great altitude reached. Here one peak rises nearly ten thousand feet above sea level.

Northern Germany, on the other hand, is a lowland whose elevation is rarely more than six hundred feet. This 2. The low-lowland, mainly in Prussia, lands broadens toward the east until it merges into the plains of Russia. In the neighborhood of Holland this plain is very low and flat (Fig. 420); but in most places its surface is rolling, owing partly to the irregular deposits left by the Great Glacier.



Fig. 419. - A view in the Black Forest, one of the low mountain regions of southern Germany.

Most of the drainage of Germany is northward into the North and Baltic seas. Name and trace the courses of four large rivers which flow northward. What river has some of its head-waters in the highland region of southern Germany, then crosses Austria and finally enters the Black Sea?

Note the number of degrees of latitude included in Germany. Climate One might expect a 1. Temperature warmer climate in the south than in the north; but on account of its elevation, the southern plateau is about as cold in winter as the northern lowland. In summer, on the other hand, the southern part, being nearer the interior of the continent, is warmer than the northern. There are some low, partly inclosed valleys in the south, however, where the climate in winter as well as in summer is warmer than that of the northern plains.

The influence of the warm waters of the very well shown along the coast. For examports of the North Sea, being most open to t are almost always free from ice; but the Balbeing cut off so completely from the open of frozen over during a part of the winter. The east they lie, the longer their trade is interrithe ice. What must be some of the result fact?



Fig. 420. - A view on the low level plain of north Germs

There is ample rainfall for agriculture in all parts of the empire. It is true that there is less rain than in east-3. Rainfall ern United States; but in the cooler summer climate of Germany not so much is needed by plants, because there is less evaporation. In the United States, east of the Mississippi, there is an average annual rainfall of about forty inches; but

Fig. 421.—Vineyards on the steep slope of the Rhine Valley near Bingen. The land is terraced here and the small patches of vineyard are inclosed within walls of rock.

in Germany there are only twenty-eight inches in the west, and twenty inches in the east, near the Russian border.

There are several low mountain areas in Germany where the soil is too poor for

Lumbering 1. Location and extent of farming, but where the slopes are not too steep, or cold, for forest growth. Indeed, the German word for woods (wald) is

a part of some of the mountain names, as in Schwartzwald, which means Black Forest (Fig. 419). Forests also cover some of the lowlands where the soil is poor. All together about one fourth of the surface of the empire is covered with trees.

The good sense of the German people is well shown by the way they treat their woodlands. Instead of wastefully destroying them by fire and the ax,—as has been forests

done in so many parts of our coun-

try, - the Germans have developed an excellent system of forest culture. Trees are planted in place of those that are cut for timber, and they are given proper care, so that the woods continue to be abundant. In this way the forest is made to yield a profit every year, just as a farm does. Germany pro-

duces a large part of the lumber she uses, and also exports a great deal.

It is partly the example of the Germans that has led our own country, at last, to begin to pay attention to the care of our forests. Our government has set aside many large forest reservations (p. 126), and schools of forestry have been started at the universities, where young men are trained for the profession of Forestry.

On the whole, Germany has not a fertile soil; but the farm products are very Agriculture extensive, be- 1. Its imporcause the people tance are both industrious and intelligent, and their method of cultivating the soil is excellent. What countries may well be contrasted with Germany in this respect? More than one third of the German people

depend for their living upon agriculture, the leading industry of the nation.

Germany is one of the most important grain-producing countries of Europe; but here rye takes the place of 2. Farm crops wheat as the principal grain. Potatoes, introduced from America, are

raised in such quantities that, like rye, they form one of the principal foods. These two crops are extensively cultivated, both because they are cheap foods, and because they flourish in a light soil and a cool summer climate. Sugar beets, hay, oats, and barley are other important crops of the northern plains, while in the valley of the Rhine, and in other warm, sheltered valleys

of the south, hops, tobacco, and grapes are raised in large quantities (Fig. 421).

Since much of the lowland is too sandy for cultivation, and much of the highland too rugged, it is not surprising that one sixth of all the surface is natural pasture. Cattle for beef and for dairy purposes are kept in nearly all parts of the empire, but especially in the damper climate of the west. Largely because wool can be imported so cheaply, the raising of sheep in Germany is becoming of less importance. Swine raising, on the other hand, is increasing because of the cheap feed supplied by the refuse from the beet-sugar factories.

Although Germany raises a great quantity of food, her population, like that of England, is so dense that she cannot produce all that she needs. Much wheat and meat must therefore be imported.

Next to the United Kingdom, Germany is the greatest mining country of Europe; and, as in Great Britain, her most valuable minerals, coal and iron, often occur in the same region. Germany reminds us of our own country in the wide distribution of her coal beds. The coal fields that were found in northeastern France and Belgium (Fig. 362) extend into Germany in the neighborhood of AACHEN; and from this point eastward to the Russian border there are several important coal fields.

Among the other valuable mineral products are lead, copper, silver, zinc, and salt. Nearly half the silver mined in Europe comes from Germany; and Belgium and Germany together produce more zinc than all the rest of the world. There are immense salt mines, as at Stassfurt, from which are obtained not only table salt, but products used in the manufacture of soap, in dyeing, bleaching, glass making, and calico printing.

The Germans make use of thoroughly scientific methods in their mining work; and from them other nations have learned many of the methods used in reducing ores to metal.

From the above facts we may expect to find Germany an important manufacturing country, with her manufacturing centers

well distributed. Explain why. About a third of the people are engaged in manufacturing, and in recent Manufacturing years Germany has advanced 1. Its imporvery rapidly in this industry. tance
Among the European countries she now ranks next to the United Kingdom in the quantity and excellence of her goods.



Fig. 422.—Storks in Strassburg, where they build their nests on the chimney tops.

The position of the coal and iron mines accounts for the location of the principal centers for iron manufacturing. 2. Leading
The busiest section is along centers of manufacturing in the Rhine, in the vicinity of facturing
Cologne; and this region may well be compared with northern England in the extent of its industries. A second center is round about Dresden and Chemnitz; and a third is at Breslau in the southeastern corner of the empire.

The map (Fig. 416) shows no cities south of BRESLAU; yet this is a busy

uring region. Cities are lacking use the people carry on the manu-

mainly in their own in factories. Thereillages stretch for ong the valleys, no large towns. everal other counfar studied, the textile industries are best developed und near the coal fields. Theresections menpove are noted n, woolen, and ries, as well as All the cotton and much of for these dustries has

sed near by, spinning and weav-

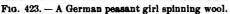
nd wool and making lace.

rom abroad.

people south

u make use

f raw ma-



homes, fore, aling is an important industry in the

> sugar cane; but this was changed when German chemists found a means of obtain-

ing sugar from beets. By improving the process, and by developing the beets until they contained more sugar, the industries of sugar-beet raising, and the refining of beet-root sugar, have been made possible. This industry has now spread to many countries, including the United States.

Each year this kind of sugar has been proving a greater rival to sugar cane, until now a large part of the sugar used in Europe, and much of that consumed in North America, is obtained from sugar beets. One important reason why this industry has thrived is that sugar beets grow in a cool temperate climate, where population is dense and markets are



willage in the Hartz Mountains, where the people carve articles of wood in their homes.

The extensive forests partly account for a third occupation in many sections; namely, the manufacture of furniture, paper, and other materials made of wood. Wood carvlumber and lumber products

> Black Forest and other parts of Germany.

The manufacture of spirituous liquors is another prominent Ger-

man industry. A portion of (8) Beverages

the immense potato crop, and also some of the beets, are made into spirits. But beer, in the manufacture of which barley and hops are used, is made in much greater quantities. From the grapes of southern Germany much wine is produced, though not nearly so much as in France.

Germany is also a great sugar-manufacturing (4) Beet sugar nation.

Until a few years ago nearly all sugar was obtained from

numerous. How is the case different with sugar cane? Formerly Germany had to rely upon foreigners for sugar; but with the growth of this industry, beet sugar has not only supplied all the needs at home, but has even become one of the leading German exports.

In the last half century no other European
Germany's country has grown as rapidly as
rapid advance Germany. There has been a
large increase in population, a
great advance in industry, and
a corresponding gain in wealth.

One cause for this advance is the strong central government established in 1871.

2. Reasons for it get the petty jealousies that (1) The governhament of industries, and led them to unite to develop the resources of the empire.

The government's treatment of education has also been of great importance. Every

German child is forced by law to attend school; and careful attention is given to the study of the industries, foreign products, foreign languages, etc. In the higher commercial and technical schools young men are given excellent training for business, while in many other countries there is little or no opportunity for such education.

The value of scientific work is fully recognized and encouraged by the government; and the wonderful development of the sugar industry, the mines, and the factories since 1871 proves that this has been a wise policy. Not many years ago much of the manufacturing was done by hand; but now factories are found on every side, and Germany is one of the three leading manufacturing nations of the world. Name the other two.

Great advance has been made in transportation. The rivers and harbors have been made more useful; canals have been extended over much of the country; and German steamship lines have been established to

various parts of the world. There is now an excellent system of railways, reaching to all parts of the empire, and connecting Germany with other European countries. The piercing of the Alps by tunnels, thus improving the connection with the Mediter—ranean, has also been of advantage.

The establishment of colonies has been fourth important aid to Germany's growth.

The empire now controls extensive areas in the island of New Guinea, north of Australia, and in both East and est of German emigrants

West Africa, as well as smaller colonies elsewhere (Fig. 417). These have they have furnished homes for emigrant from crowded parts of the home country and because they have brought much trade to Germany.

Many more Germans have emigrated to various parts of the New World. Over five million have come to the United States within the last seventy-five years, while the British Isles have sent us about seven million. Many of the German emigrants to these other countries have kept up trade with their fatherland, and have thereby in creased the commerce of Germany.

Naturally, in a country making such rapid advances, the cities have grown also, as has been the case in the United Principal cities States. In the twenty years 1. Their rapid between 1870 and 1890, for growth example, Berlin had a more rapid growth than New York, and added as many new residents as Chicago. In 1875 Boston had almost a hundred thousand more people than Hamburg; but now Hamburg has over two hundred and sixty-one thousand more than Boston. These and other German cities are still rapidly increasing in size.

The position of Berlin, on the small Spree River (Fig. 425) on the North German plain, midway between the 2. Berlin coast and the highlands, may (1) Its location not at first seem a very favorable one. However, the Oder, a large river, and some

tributaries of the Elbe approach so | aid in bringing fuel, food, and raw ach other in this section that they materials for manufacture, and in taking asily been connected by canal. Thus, away manufactured articles.





Fig. 425. - Berlin and vicinity.

has water connection with both URG and STETTIN, two important ts, and with all parts of these two

Observe also (Fig. 416) that Berlin lies on the direct route from Hamburg to Breslau, and from Stettin to Leipzig, and that other large cities surround it. It is, moreover, on the route of several of the chief European railways, and is therefore one of the leading railway centers of the continent.

With such excellent connections, by water and by rail, (2) Its impor-Berlin has tance become one of the principal manufacturing cities of the empire. Fully half the residents are supported by manufacturing, which includes brewing, the making of fancy articles, clothing, machinery, etc. Besides being the capital of Prussia and of the German Empire, Berlin is the center of German banking. It is noted for its art and music, and for its great university, the largest in the empire. There are a number of suburbs, one being POTSDAM (Fig. 425), the German "Versailles," in which are located several royal palaces.

Among the cities not far s. Interior from Berlin is LEIPZIG, the cities near fifth in size in the empire. It systems. This is a very important | is situated at the junction of (1) Leipzig

two small streams, at a point where roads from the highland meet those from the low-land. Formerly it was at the crossing of important wagon roads, and now it has become a railway center. Owing to its favorable position, Leipzig is, next to Berlin, the most important trade center of Germany. One of its leading articles of commerce is fur. It is the seat of a noted university, and a center for

DRESDEN, southeast of Leipzig, is noted for its art museum (Fig. 426), which (2) Dresden rivals the Louvre of Paris. The beautiful Dresden china is made in this vicinity, and in recent years much manufacturing has developed; for Dresden is situated on the navigable Elbe and has coal near at hand. is, moreover, the capital of Saxony, the most densely settled German state.

the German book trade.

CHEMNITZ, near by, has important textile industries. IHALLE and

(3) Chemnitz,

MAGDEBURG, farther to the north-

Hulle, and
Magdeburg

west, and in the center of the chief
beet-growing section, are extensively

engaged in the manufacture of sugar.

BRESLAU, a city not much smaller than Leipzig, is on the Oder, a navigable river. It has the advantage of being near a very rich coal and iron field, and is, therefore, a great manufacturing center. Its situation, near the Russian frontier, makes it an important market for eastern and central Europe.

In the highland of South Germany is MUNICH, the capital of the kingdom of 4. Munich and Bavaria. Although so far to Muremberg the south, and so distant from coal, Munich is the third city in size in the realm. It is on the trade routes from Germany to Italy and to Austria, and is accordingly an important railway center. Much of its renown is due to its art collections and its art industries, such as work in

bronze, gold, silver, glass paint porcelain manufacturing.

North of Munich, on the road t is NUREMBERG. This quaint famous in former centuries for it architecture, and many of its tres still carefully preserved. At pre an important center for the manuftovs.



Fig. 426. — The Dresden Art Museum which contains many treat

HAMBURG, which is growing s in population, is the second city in and the most important seaport on the continent. The reasons for this are clear when it is that the estuary of the Elbe (I makes an excellent harbor, usually ice, and that Germany has an of foreign trade. Name some artice the United States that probably e port. What water connections h burg with the interior?

Bremen and Stettin also admit lar and are the chief rivals of Hamburg; b gether have less than one half as much of Hamburg. In what respects is the si Hamburg more favorable to commerce the Bremen and Stettin? Name other Baltisides Stettin. Which is a natural outlet from Russian Poland? Estimate the dist

to the Baltic ports by the cutting of the Kaiser Wilhelm canal, south of Denmark, which is sixtyone miles in length. What city is at the eastern end of this canal?

On ascending the Rhine into Germany we come to the great manufacturing region,

6. Cities along already mentioned (p. 312).

What cities are found there?

(1) Cologne Cologne, the largest, with a population of over half a million, is on the river bank. It is a great



Fig. 427. — The Čologne Cathedral, one of the most famous churches in Europe.

shipping point, since railways cross the river, and boats from London and other places are able to ascend to this point.

Near Cologne are Elberfeld and Barmen, which have textile manufactories; Essen, which is famous for the Krupp steel works; Krefeld, which is an irreportant silk-manufacturing town; and Aachen

(Aix-la-Chapelle in French) which manufactures woolen cloth.

Just beyond the chief bend in the Rhine is Frankfurt, on a navigable tributary, the Main. The easiest route from the Rhine Valley to the Danube lies along this tributary; and, since the railway from the German plain to the upper Rhine passes Frankfurt, this city is a center of important trade routes. For this reason it is one of the chief trading and banking centers in Germany. It has long been prominent, and was the capital of the old German Confederation (p. 308).

The Rhine, the most important river in Germany, is often compared with the Hudson. In both rivers there are sections that are shut in by high, rocky cliffs, well wooded pared with to the top. The Rhine, however, is much narrower than 1. In scenery the Hudson, so that these walls seem loftier; and since the stream is more winding, they often stand out boldly, as if in the very path of boats, to bar their further progress.

When one journeys along the more beautiful portion of the Rhine, a fine old castle often comes into view, as a turn in the river course reveals an especially bold cliff. Sometimes several such reminders of the past may be seen from a single point on the river. Many of these are in ruins, but now and then one is seen that is still kept up as a residence. The Hudson lacks such castles, although there are many magnificent residences along its lower course.

There are many terraced vineyards on the sloping hillsides bordering the Rhine (Fig. 421), and likewise many a quaint village built on a narrow strip of flood-plain between the river and the cliff (Fig. 429). Since the Rhine receives more large tributaries than the Hudson, there are more wild glens on the sides, and more broad, wooded valleys, which open up charming views from the river. The openings in the valley walls, where these tributaries enter, are favorite sites for towns.

In regard to the distribution of cities along its banks, the Rhine offers still further contrast to tion of population at large population at only two points; namely, near its mouth, where there



Fig. 428. — Some of the quaint houses in the ancient city of Frankfurt.

are millions of people, and about one hundred and fifty miles above the mouth, where government

Albany, Troy, and Cohoes are situated. Between Yonkers, just above New York City, and Albany, there is not a city with thirty thousand inhabitants. The Rhine, on the other hand, while having no enormous collection of people at any one point, has many populous cities along its course. Name several. What have you already learned about Rotterdam at its mouth? How does it compare with New York City in size?

1. What is the position of Ger-Review Questions advantages. 2. What about the formation of the empire; its present area and population? 3. State the chief facts about government. 4. Why is the boundary lin



Fig. 429. — The Rhine, with a village, a vineyard, and an old castle on the right.

irregular? 5. Show how preparation for war is a very important occupation in Germany. 6. Describe the highlands. 7. The lowlands. 8. The drainage. 9. Tell what you can about the temperature; the rainfall. 10. What is the condition of lumbering? 11. What are the leading agricultural products? 12. What are the principal mineral products? 13. State the importance of manufacturing; and locate the leading manufacturing centers. 14. Name the principal kinds of manufacturing. 15. How has Germany advanced in recent years? Give some reasons for it. 16. What can you tell about the rapid growth of the cities? 17. State the principal facts about Berlin. 18. Leipzig. 19. Dresden. 20. Chemnitz, Halle, and Magdeburg. 21. Breslau. 22. Munich and Nuremberg.

disadvantages? What relation has this to emigration? 4. What is the size of our standing army? Why so small? 5. What seaports of Europe most nearly approach Hamburg in size? 6. How might the Kaiser Wilhelm Canal possibly prove an injury to Hamburg? 7. Show that Germany resembles Great Britain in her industries, while differing greatly from Russia and Norway. 8. Find out something about Goethe; Schiller; Humboldt; Emperor William the First; Bismarck; Von Moltke Wagner; Schumann.

IX. SWITZERLAND (Fig. 390)

1. What countries surround Switzerland (Fig. 358)? 2. What mountains extend along the boundary

ries of Switzerland? 3. Which of the boundaries is least mountainous? 4. What large rivers rise among the Alps? In what direction does each flow? 5. There are many lakes among the Alps (Fig. 416). What does their abundance suggest? 6. How does the area of Switzerland compare with that of your own state?

This is a very mountainous country (Figs. 430 and 434), Surface for the Jura features
Mountains are on the northwestern border, while the Alps occupy the southern half. Between these two mountain systems, which extend northeast and southwest, is a low, hilly plateau, from one to two

thousand feet in altitude. About one third of Switzerland is included in the plateau belt.

It is evident that the climate of this mountainous country must be cool, and that there must be great differ-climate ences in temperature according 1. Temperato the altitude. At the base of ture the Alps, chestnut and walnut trees grow; higher up, these give place to the beech, maple, and other trees of the cool temperate



Fig. 430. — Snow-covered mountains with a glacier extending from them down one of the Alpine valleys.

23. The seaports. 24. The cities along the Rhine.
25. Name and locate the principal cities of Germany.
26. Compare the Rhine River with the Hudson in senery.
27. In distribution of population along its course.

1. Find in an atlas in what parts of the empire the larger states, such as Prussia, Bavaria, Saxony, etc., are situated. 2. People often assert that the peace of Europe is preserved by careful preparation for war; in what sense can this be true? 3. What must be some of the benefits of two years of active training in the army, aside from preparation for war? What are some of the

ies; and still higher is a belt of eversens. Above these come dwarfed trees, rubs, and grass; and higher still, at an rerage elevation of about nine thousand set, the snow line is reached.

The lofty Alps, rising in the path of the prevailing west winds, cause Switzerland 2. Rainfall and to be one of the wettest counthe formation of tries on the continent. On glaciers the higher mountains much snow falls; and, sliding down the mountain sides in the form of avalanches, it gathers in the valleys to produce streams of ice, or glaciers (Fig. 430). These move slowly down the valleys until they reach a point, below the snow line, where the ice melts. The Rhone and other rivers are supplied with water by the melting of the Alpine glaciers.

In so rugged a country one would hardly expect a large population; yet Switzerland People and is almost as densely settled government as France, and much more so than the state of New York.

People who dwell among mountains develop a spirit of independence, as is illustrated by the story of William Tell. Thus we find that, as early as 1291, an agreement was made among a few of the small Swiss states, or cantons, to unite for protection. Many a time since then other nations have tried to conquer the Swiss; but, aided by the difficult approaches to their country, and by the mountain strongholds to which they could retreat, the Swiss have been able to maintain their freedom. Yet the area of the entire country is only one third that of Penusylvania. Their twenty-two cantons, united somewhat as are our states, now form a republic whose independence the Great Powers of Europe have agreed to maintain.

Although the Swiss have a stable government, they lack a common language. The country is most open toward the north, for there the plateau of Switzerland merges into that of Germany. Naturally, therefore, the influence of Germany has spread into Switzerland, and German-speaking people are most numerous, making up over one half of the contaction. The approach from France

is much more difficult, and the French population forms less than one fourth of the whole, while the remainder speak Italian.

Owing to the mountainous condition only one acre in nine is fit for the plow—Yet agriculture is the principal industry. On the lower lands grain, potatoes, grapes, and the mul.



Fig. 431. — A Swiss peasant girl in native costume

berry tree are raised, as in the neighbo countries; and on the lower mountain sl dairy farming is important, as might b pected. Here cattle and goats are rebeing driven to higher pastures a snows melt from the mountain. The population is so dense, howeve much food must be imported; but and condensed milk, made from farr ucts, are exported.

Switzerland is very poor in min



Fig. 432. — Cattle on the slopes of the Alps.

reity of raw materials would suggest; and that there is little manufacturing turing; but this is not the for in spite of the absence of coal, leposits, and cotton, the Swiss have oped extensive manufacturing. Like ew Englanders, they make light artimainly, such as jewelry and textile

sespecially silk. They lo much wood carving. ere are several reasons manufacturing is so highly deus for so veloped. Alnanuthough coal is ng .ter wanting, there is abundant · power, supplied by wift mountain streams, are fed by the melt-The Swiss are nows. g a leading place in ise of such power, by s of electricity. ey are unusually skillnechanics, too, a fact that is proved by the remarkwood carving for which have long been noted.

The Swiss are further favored by their central position; 3. Central for they location are surrounded by densely populated countries which supply raw materials and furnish a market for manufactured goods.

Finally, their roads and railways are remarkably 4. Roads and developed. railways

One might think that it would be very difficult to transport goods

in such a country. In fact it would be, if the Swiss had not taken special pains to overcome the difficulties; but the very fact that nature has made transportation so difficult, has led the people to build the best of highways. No country in the world has better roads than Switzerland.

Railroads pierce the mountains in several directions, connecting Switzerland with foreign countries.



Fig. 433.—The St. Gothard Railway on the south side of the Alps. Here are seen three tracks one above the other, for at this point the railway enters the mountain, swings in two great circles, coming out each time at a higher level.

One of the most important is the St. Gothard Railway, which connects Switzerland with Italy by the St. Gothard Tunnel. This is one of the longest tunnels in the world, and is a marvel of engineering skill. Before reaching the main tunnel, in traveling north, several smaller ones are entered, through which the train winds in a circular course. A passenger twice comes out of the mountain almost directly over the point where he entered it. There, far below him, he can see the two places at which the train entered (Fig. 433). Such winding tunnels are necessary, because the grade is so steep that a train could not be drawn directly up a straight track. The main tunnel, which is nine and one fourth miles

long, is quite straight. The Simplon Tunnel, even longer than the St. Gothard, now pierces the Alps a short distance farther west.

ZURICH, the largest city in Switzerland, is Leading cities situated on Lake Zurich. It is an important railway center, being connected with Italy by the St. Gothard Railway, while other railways bring it in touch with France, Germany, and Aus-These

roads are especially important in bringing foods, as well as silk and other raw materials, for manufacture. Therefore Zurich is the center of one of the principal manufacturing districts. It is noted for the manufacture of silks, cotton, and machinery.

BASEL, the second largest city in Switzerland, is the busiest railway center in the country. It is on the main line of the St. Gothard Railway, and on the Rhine at the point where it enters Germany from Switzerland. Why is its position, near both France and Germany, favorable to manufacturing?

GENEVA, situated on the lower end of Lake Geneva, near where the Rhone enters France, is the third city of the Republic, and a noted educational center. It is on a very ancient and important trade route from the Mediterranean to Germany (p. 290), and has excellent railway connections. There is much manufacturing, among the important articles made being jewelry and scientific instruments.

BERNE, the capital, is centrally located but it is a small city because it is not favorably situated for commerce.

Many of the Swiss cities and towns are beautifull situated upon lakes, and within sight of mountain



Fig. 434.—The snow-capped Alps as seen from Mount Pilatus, with Lake Lucerne in the foreground.

peaks always covered with snow. LUCERNE, fearmple, is surrounded by grand and varied scener. The city is located upon Lake Lucerne, and lofty mountains rise close at hand (Fig. 434). Mounts

Rigi and Pilatus are near by, and from their summ its one obtains magnificent views of the lake, over forum thousand feet below, bordered by green meadows and numerous villages. In several directions, as far as the eye can reach, are the snow-covered crests of stupendous, jagged mountains.

On account of such scenery Switzerland is the most noted summer resort of Europe; and the entertainment of visitors is one of the leading occupations of the Swiss people. There are many hotels and fine roads, that one can easily so almost anywhere. It is possible even to reach the tops of several of the mountains by rail. Every summer many Americans cross the ocean to enjoy the Swiss scenery.

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1. Describe the surface of Switzerland. 2. The climate. 3. State the chief facts about the people and the government. 4. What about the languages? 5. State the principal facts about agriculture. 6. About mining and manufacturing. 7. Give several reasons why manufacturing is so well developed. 8. Locate and state the main facts about Zurich. 9. Basel. 10. Geneva and Berne. 11. Why is Switzerland so attractive to tourists?

1. How may the lakes filter and regulate the rivers? 2. What reasons are there for giving particular attention to the study of English and other foreign languages in the Swiss schools? 3. Why has Switzerland, unlike



Fig. 435.—A team in Naples consisting of a horse, a cow, and a donkey.

many European countries, not come into possession of colonies? 4. Find the meaning of "referendum" and "popular initiative" in Swiss legislation.

5. Switzerland has long been selected as a place of refuge for persecuted people and political refugees from other nations. Why? 6. Read that portion of the story of William Tell which is supposed to have occurred about Lake Lucerne. 7. Find out where Louis Agassiz was born; where he later lived; and what he did to prove his theory of the Great Ice

X. ITALY (Fig. 416)

1. The shape of Italy reminds you of what object [Fig. 416)? 2. How does its latitude compare with that of Spain? 3. What neighboring islands belong to it? 4. Point out the principal river. 5. How are the lofty moun-

tains in the north likely to affect the climate farther south? 6. What countries border Italy? 7. What seas border it? 8. How does its position seem to be favorable for commerce?

The area of Italy, including the islands of Sicily and Sardinia, is only a little greater than that of Colorado; but its Its area and population is over thirty-four population million. It is the smallest of the six Great Powers, but is the most densely settled of any except the United Kingdom. Name the other Great Powers.

The position of Italy is a very favorable one. It lies in the midst of the Mediterranean, Importance of whose shores are its position densely populated. What country in Africa lies nearest to Italy (Fig. 495)? Estimate the distance to it. How far is it from Italy to the Suez Canal (Fig. 455)?

It has been said that Italy is "the very heart of the Mediterranean lands, and plays a great part as a link in the chain of communication between northwestern Europe and the Far East." For example, mails from London to India are carried by water to the western coast of continental Europe, and then go overland to Brindisi, and thence by steamer. From this

it is plain that Italy's central position is an advantage for trade with Africa and Asia, as well as with southern Europe.

The inhabitants of Italy are a mixture of many peoples. In early times, the central position of the peninsula was People and of importance in aiding Rome government to control the lands bordering on the Mediterranean Sea. At that time people from the surrounding lands of Europe, Asia, and Africa were brought to the peninsula, often as slaves captured in war. Later, when the power of the Roman Empire was weakened, hordes of barbarians invaded Italy from central Europe.

For centuries after this, Italy was broken

up into a number of independent states. In 1860, however, several of these states united to form the Kingdom of Italy. Later others were added, until in 1870, or about the time that the German Empire was formed (p. 308), the present kingdom was established, with ROME as its capital. Like most of the European counindustry of Italy.

tries, Italy is governed by a limited, or constitutional,

monarchy.

Throughout most of its extent, the Italian peninsula is mountainous. In Surface the north are the features Alps, some of whose highest peaks are on the boundary between Italy and Switzerland. The Alpine ranges curve around in northwestern Italy and join the Apennines, which extend the entire length of the peninsula and form its very backbone. The principal lowlands, therefore, are the narrow coastal plains and the broad Po Valley. There are also many small, fertile valleys among the mountains.

We think of Italy as a sunny land of flowers, alclimate though Milan and

Venice are in nearly the same latitude as Montreal. One reason for the pleasant Italian climate is that the lofty Alps form a wall which cuts off the cold north winds. Another reason is that the temperature is greatly influenced by the Mediterranean Sea, whose waters do not freeze even in winter. On these accounts the Italian winters are mild; and in the extreme south the temperature seldom falls to the freezing point.

Much of Italy has an abundance of rain; but everywhere, except in the north, the greater part comes in winter.

The summer drought is due to the fact that the horse-latitude belt moves

northward in summer and covers (p. 209); therefore at that season climate of southern Italy resembles the southern Spain.

Such a climate, together with a f soil, helps to explain why agricult agriculture is the principal industry of Italy.



Fig. 436.—Lago di Garda, one of the Italian lakes on the souther of the Alps. Here are found groves of lemon trees along the she the lake.

The most extensive farming distr the fertile plain of the Po Valley. is an abundance of rain here; 1. Exte yet the people depend upon irrigation irrigation more than in most reasons other parts of Europe. There are se reasons for this. In the first place tributaries of the Po, fed by the rains, s and glaciers of the mountains, furn steady supply of water to the gently sle land. Besides this, the rivers frequ flow through lakes - some of them a the most beautiful in the world (Fig. -which act as great reservoirs for supply. This tends further to furn regular supply.

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In the second place, better crops can be raised by irrigation than without it, partly because the flooding of the land fertilizes the soil, and partly because with irrigation there can be no drought. By the aid of Arrigation, from four to ten crops may be raised in a year.

Among the products are many that thrive in semi-tropical climates, as well as others 3. Agricultural that are common in northern Where irrigation is Europe. so easy, the extensive cultivation of rice is

is ground up into a kind of meal, as wheat is ground into flour.

Among the mountains there is much natural pasture, to which herds of sheep and goats are driven in summer. Many goats are raised in Italy for their milk, and they are even driven into the cities, and milked at the doors of the customers (Fig. 437).

One great drawback to the proper development of agriculture in Italy is the presence of broad,

marshy tracts infested with mosquitoes, whose bite causes malaria.

3. Important drawback to This is especially true in the south- agriculture ern half of the country, and there,

even with fertile soil and a warm climate, large tracts of land have had to be abandoned. One sixth

of the population suffers from malaria, and there are thousands of deaths from that disease every year. It is not to be wondered at that the Italian governments is attempting to stamp out this dread disease.

The fishing industry is important. Among the peculiar Fishing and products of mining the sea are precious coral and sponges. You will remember that we found sponge fishing important also among the Bahama Islands east of Florida.

In Italy there is a general lack of valuable mineral deposits. Except in the island of Elba there is almost no iron; and no coal of value is found in the kingdom. Indeed coal, wheat, and cotton are the leading imports. There is a little zinc and copper ore; but one of the most important mineral products is the sulphur of Sicily. Another mineral product is the pure white Carrara marble, of such rare beauty that it is prized the world over.

As in Switzerland, water power supplies the place of coal to some extent, often being used to produce electricity. Manufacturing There is, therefore, more manufacturing than one might infer from the lack of fuel. While much raw silk is pro-



- A herd of goats in the streets of Naples. They are driven from door to door, and milked whenever the customers wish to buy the milk.

This is an important crop in Possible. morthern Italy; but corn and wheat are raised in still greater quantities. Grapes are grown to such an extent that Italy ranks first among the wine-producing Countries of the world; and so many silk Worms are reared that raw silk is the most Valuable export. Among the other im-Portant products are eggs, which are ex-Ported in large quantities; also olives, Oranges, lemons, flax, hemp, and wool.

On some of the slopes forests are grown, but most the natural forest was cut off long ago. Among the useful trees is the chestnut, which is planted in ves for the nuts, that serve as an important food. The Italian chestnut is much larger than ours, and

duced, and there is some silk manufacturing, a large part of the raw silk is sent to France, Switzerland, and elsewhere, to be made into cloth. There are also factories for woolen, cotton, and flax weaving, and for other purposes.

Most European countries take pride in their fine art museums; but Italy far surpasses them all. It is the very storehouse of art, whether architecture, harbors, we may expect to find numerous large cities along the coast, as in Great Britain. But it is different in the interior, for in so small and mountainous a country, with no coal and iron, there is less reason to expect large (1) Beauty of its location

The most populous city is NAPLES, in



Fig. 438. — Vesuvius in eruption (1892). A great column of steam and ash rises above the volcano; while streams of liquid rock, or lava, are flowing down its slopes.

painting, or sculpture be considered. Because of the artistic tastes of the Italians, many of their manufactured articles are of an artistic nature. Among their manufactures are glass work, lace making, earthenware manufacture, the making of statuary, wood carving, coral carving, and straw plaiting. In what other country have we found that the artistic taste of the people greatly affects their manufactures (p. 285)?

Estimate the average width of the Italian peninsula. Since it has many excellent

the southern part of the peninsula. The semicircular Bay of Naples, on which it is situated, presents a most magnificent sight. On the north side, near the head of the bay, is the city itself, rising, street above street, upon the slopes of some low hills. Toward the east is Mount Vesuvius (Fig. 438), with the crests of the Apennines in the distance. And on the south side of the bay is a steep, rocky coast, behind

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which are numerous villages, partly hidden among groves of orange, lemon, and olive trees. All around the bay is a succession of towns and villages.

This is one of the most densely settled regions in Europe. There are several reasons for the dense poputation here for that the land here is especially fertile, having been made so by the decay of the volcanic ashes that have



Fig. 439.—A street in Pompeii. Even the tops of the houses were buried beneath volcanic ash which was erupted from Vesuvius (seen in the background) in the year 79.

been thrown out of Vesuvius. The climate is also favorable to the growth of crops, and therefore the region around the bay supports a dense agricultural population. The harbor, too, is good, so that there is more shipping here than in any other Italian port, with the single exception of Genoa.

The reason for so large a city, and for so many owns and villages in this agricultural region, is found artly in the peculiar character of the Italians. They be la dread of isolated homes, such as are common the farming district of the United States. Instead, refore, of living in scattered houses on farms, they will into the villages and cities. They do this, too, wen though they must travel a long distance to their lds of work, or must suffer now and then from extens want.

Within plain sight of Naples stands Mount Vesuvius, a cone of lava and ashes nearly a mile in height, from (3) Mount Vesuwhose crater volumes of steam vius; its history constantly pour forth. At the and attractions time of Christ the slopes of this mountain were dotted with productive farms, while thriving towns spread over the country at its base. But in the year 79 a terrible eruption took place which completely buried

Pompeii, Herculaneum, and many villages, beneath showers of ashes and streams of volcanic mud. Since then Vesuvius has been in eruption many times, the last violent outbreak occurring in 1906.

During the last century the buried city of Pompeii has been uncovered at great labor and cost. By these excavations much has been learned about the buildings and customs of the people who lived here at the time of Christ. One can walk along these deserted streets (Fig. 439), and wander among the ruined homes from which the people were driven forth on that terrible day, nearly two thousand years ago.

At present, tourists are able to go to the summit of Vesuvius almost any day. There they see one of the most awful sights in the world, when they cautiously approach to the very edge of the crater—an

opening perhaps a quarter of a mile across—and peer down into the abyss. Sometimes reports like the thunderings of cannon come from far below, and lumps of white-hot lava, several feet in diameter, are hurled upward. At times lava lumps are thrown above the mouth of the opening and fall here and there outside, making one's visit full of excitement.

The principal city south of Naples is PALERMO, the capital of Sicily. It is situated in the midst of extensive vineyards and fruit groves. What fruits would you expect to find there?

The site of Rome was well chosen. It lies near the center of the Rome

Mediterranean and near the 1. Advantages center of the Italian peninsula of its location

as well. In that part of Italy the fertile coastal plains are broad, and are crossed by the Tiber, the largest river of the country except the Po. In that vicinity, also, the



Fig. 440.—St. Peter's Cathedral (on the left) and the Vatican (on the right) in Rome.

Apennines reach their greatest height, which insures abundant water supply for the Tiber and for irrigation on the plains. Moreover, the valley of the Tiber offers one of the most convenient routes across the peninsula.

These are some of the advantages that attracted to ancient Rome a population of fully a million, and caused the surrounding country to be thickly settled and carefully tilled.

Now, however, the city contains about half as many inhabitants, 2. Influence while the neighborof malaria ing plains, for miles around, though beautiful pasture land, have scarcely a tree or a house upon them. Because of the dread malaria, people shun this region, and at present much of the country is used only for grazing. As summer approaches, even the herdsmen flee with their cattle and sheep to the mountains.

Although agriculture and commerce do not flourish near Rome, fine residences, public buildings,

in the city. The dome of St. Peter's — the largest and most famous church in the world — towers above everything else; and the

Vatican, where the Pope resides, is the most noted palace in Christendom (Fig. 440). In the Vatican are some of the finest and most beautiful of Michael Angelo's paintings.

The ruins of ancient Rome which rival in interest these works of later days, cover so many acres that the city is almost as much a tomb as a living city. One of the most notable relics of the past is the Colosseum (Fig. 441), a huge, oval-shaped amphitheater, open to the sky, with seats for forty or fifty thousand persons. In the days of the Roman Empire it was

used to witness life-and-death struggle between men, and between men and wild beasts.

The Forum is another extensive ruin within the city limits. It was the great



Fig. 441. — The Colosseum, one of the ruins of ancient Rome.

public square, on a lowland among some low hills; but its monuments, arches, and other ornaments became covered with rub bish during the centuries that followed the fall of the Roman Empire. The excavation

of this famous spot has not yet been compounded valley. The railways recently pleted, whole buildings, as well as smaller built across the Alps (p. 321) have greatly objects, having been buried in

that locality.

With the exception of Rome and Naples the large cities of Principal cities the Italian peninsula are in the in the north 1. Florence northern part. The first one north of Rome is FLORENCE, on the western base of the Apennines, at a junction of roads across the mountains. Straw plaiting, mosaic work, and silk manufacturing are important Florentine industries. Florence is famous for its art galleries, which are among the best in the world.

MILAN, the leading city of northern Italy, owes its importance to its 2. Milan and Turin location at the

crossing of routes of travel and commerce; one of these runs east and west in the Po Valley, the other north and south across TURIN has flourished for a the Alps. similar reason. From very early times



Fig. 443. - One of the canals of Venice with a gondola floating upon it.

these cities have been important trade centers because of their position at the crossing of trade routes in a fertile, densely | European cities. When hordes of barba-



Fig. 442. — The Milan Cathedral.

increased their importance. They are busy manufacturing centers, making silk goods, cutlery, and other articles.

MILAN possesses a magnificent cathedral (Fig. 442), built of white marble, and adorned with more

than a hundred spires and fully four thousand statues. On the wall of a former monastery at Milan is Da Vinci's famous painting, "The Last Supper," copies of which are seen in many of our homes.

GENOA, although separated from the Po Valley by the low northern Apen- 3. Genoa nines, is the natural seaport for Milan and Turin. Since it is a port of outlet for so fertile a region, and is now connected with central Europe by railway (p. 322), this city is the most important seaport in Italy.

The principal port on the Adriatic Sea is VENICE, one of the most interesting of rians were invading Italy, some of the inhabitants retreated to a number of small, marshy islands in a lagoon, 4. Venice protected from the sea waves (1) Its location and former imby low sand bars. The deportance scendants of these people developed into a hardy, independent race, largely through contact with the sea. Their very position forced them to become sailors; and the site of their city was favorable for commerce between central Europe and Asia. Protected from attack by land, Venice rose in power, and with power came



Fig. 444. — The citadel of the Republic of San Marino.

wealth. Many beautiful houses, churches, palaces, and museums still remain to remind us of the ancient splendor of Venice.

The city is built upon more than a hundred small islands, about two and a half miles from the mainland, with which it is now connected by railway. Canals take the place of streets. There are one hundred and fifty canals, the main one, or Grand Canal, being bordered by fine (2) How the residences built of white marble, city is built whose doorsteps lead down into the water. Nearly four hundred bridges join the different islands, and there are many narrow footpaths; but since the chief thoroughfares are canals, gondolas (Fig. 443) take the place of wagons, carriages, and street cars. No doubt, thousands of children in that city have never seen a horse.

San Marino, although surrounded by lands that belong to the Kingdom of Italy, is, like Andorra (p. 291), a tiny, independent republic. It is the oldest

and smallest republic in the world, and owes it is its independence partly to the fact that the city is on: its high, steep hill (Fig. 444) and, therefore, was difficult to capture.

South of Sicily is the small island of Male la (Fig. 358), which, like Gibraltar, belongs to Green at Britain, and is strongly fortified.

1. Give facts about the area and population Italy. 2. Explain the importance of its position - n. 3. Tell about the people, and the Review government. 4. Describe the surface features. 5. The climate. 6. Why is irrigation especially common in Ital-7. Name the agricultural products. 8. How domalaria interfere with agriculture? 9. State t principal facts about fishing and mining. 10. Man facturing. 11. Describe the beauty of the locatic -11of Naples. 12. State the reasons for the dense pos ulation here. 13. Tell about Mount Vesuvius; in history and attraction. 14. Locate Palerman 15. State the advantages of the location of Romm 16. What about malaria in its vicinity? 17. Wh-_at are its present attractions? 18. Locate and sta-_te the principal facts about Florence. 19. Milan ar Turin. 20. Genoa. 21. Venice. 22. San Mari-0 and Malta.

1. Why should Italy have been much more important in former times than now? 2. What com onies has Italy in eastern Africa (Fig. 495)? Suggest reasons why Italy has so few colonies. 3. What must have been the influence upon Genoa and Venice of the dicovery of the ocean route to India? Why 4. What must have been the influence of the Su Canal? Why? 5. Mention advantages and diss advantages of life in Venice. 6. Mention some the uses of sulphur. 7. Make a post card collectio: of the different famous pictures of the Madonna.

8. Find out about the Catacombs of Rome; the Appian Road; the Aqueducts. 9. Ask some lawye to tell you what influence Roman law has had upor our own law. 10. Find some facts about Casar Cicero, Dante, Leonardo da Vinci, and Michael Angelo. 11. Where was Columbus born?

XI. AUSTRIA-HUNGARY (Fig. 416)

1. Compare Austria-Hungary with Germany in area. 2. In population. 3. In number of large cities. In which country, therefore, would you expect to find the greater development? 4. How much of the boundary is formed by water (Fig. 416)? 5. What countries border this empire? 6. What portions are mountainous? 7. What about the variety of climate? 8. What sections do not belong to the Danube basin?

Austria-Hungary is one of the most mountainous countries in Europe. It includes the Surface eastern half of the Alps (Fig. 445), besides several other ranges. These mountains form a circle inclosing a broad level area (Fig. 359), called the Hungarian plain (Fig. 447), through which the Danube River flows. The encircling mountains are broken at only two points,—once near Vienna, where the Danube enters the Hungarian plain, and again on the southeastern boundary, where that river leaves it.

In so mountainous a country there are naturally many different kinds of climate.

Climate Everywhere except on the higher mountains, however, the temperature is favorable for the growth of grains and other crops of temperate latitudes. That is, the summers are warm and the winters are cold; but the difference between summer and winter is much greater than in England. Why?

The rainfall of the lowlands, which averages little over twenty inches, is barely enough for agriculture, and there are, therefore, occasional summer droughts in some places.

There are many different kinds of people in this country, with very different customs People and languages. For instance, and languages. For instance, to mainly in Austria, are of German stock. Magyars, descendants of Mongolian invaders, form over half of the Population of Hungary. But races related to the Slavs of Russia are more numerous than either of these. There are also many Italians, as well as other peoples. German is the official language, and is spoken by the educated classes; but at least a dozen languages are spoken in the empire, and even two or three in a single town.

To be sure, a similar statement might be made in regard to the United States; for we also have a great variety of languages. But no matter from what part of the earth our citizens have come, they soon change their former customs, and become genline Americans in spirit. The principal exception is the Chinese. The many peoples of Austria-Hungary resemble the Chinese in their tendency to remain apart. Their religions, languages, and customs are so different that it is difficult for them to agree. Therefore they are often jealous and suspicious of one another.

One reason for this mixture of peoples is the rugged country, with many inclosed valleys, in which the people 2. Reason for have developed different cus-such a mixture toms. A second is that the empire has been increased in size by conquest. For



Fig. 445.—An Austrian village with mountains in the background.

example, note the country nearest Russia, north of the Carpathian Mountains. Here the boundary line cuts across a plain, instead of following mountains, as it does for a large part of its length. This plain is a part of the ancient Kingdom of Poland, which once stretched from the Baltic Sea to the Carpathian Mountains. When Poland was conquered and divided among Russia, Germany, and Austria (p. 307), this, the smallest portion, was Austria's share.

A third reason for such a mixture of races is found in the central position of

the empire. On that account people have entered it from various directions, and



Fig. 446. - A family of gypsies and their house,

remained there. Thus it happens that Italians have pushed in from the south-

west, Germans from the northwest, Russian Slavs from the north, and Magyars from the

It has been a difficult matter to bring all these people under one government. Government Nevertheless, in 1867, the Austrian Empire and the Kingdom of Hungary were united, under Emperor Francis Joseph, to form the Empire of Austria-Hungary. Each of the countries has its own constitution, makes its own laws, and is independent

of the other in most respects. work together in matters of common in- is celebrated for its beauty. The ex

terest, such as the army and navy, affairs, and finance.

Many of the mountain slopes are covered, and wild animals are still for the remoter parts. Since nearly Lumb a third of the empire is wooded, agricu lumbering forms one of the import dustries.

Where the woods have been cleare from the mountain slopes, there are p for sheep and goats. Cattle are also especially on the lowlands.

Near the Adriatic, and in the valleys, there are many vineyards; a mulberry tree is raised to furnish for the silkworm, as in Italy (p. 325) and ern France (p. 285). Flax, hemp, pe sugar beets, and tobacco are oth portant crops. But the grains, est wheat, rye, barley, oats, and corn, staple agricultural products of both. and Hungary. The broad plains Danube (Fig. 447) form one of the wheat-producing regions of Europ much wheat is raised that a large a is exported.

There is much mineral wealth mountains, including deposits Minin of salt, gold, silver, lead, mercury, and copper. There are also p



Fig. 447. - The broad, level Hungarian Plain, on which vast quan

But they | stones, such as the Hungarian opal,

quality of the clays has made possible the manufacture of fine porcelain ware; and the mineral quartz supplies the material for the Bohemian glass blowers, who make some of the finest glassware in the world. This glass is beautifully colored by adding small quantities of mineral substances, such as silver, copper, and cobalt, which are mined in the country.

Iron ore is widely distributed; and Austria-Hungary ranks fourth among the coalproducing countries of Europe (Fig. 362). Some of the best deposits are in the northwest, near Prague, which explains why

that city is extensively engaged in iron manufacturing. Petroleum is also found in this empire.

There is much less manufacturing in Austria-Hungary Great Manufacturing than in Britain, Ger-1. Its extent, and kinds many, or France. Yet there are numerous cotton, woolen, flour, and paper mills, iron manufactories, and beetsugar refineries. There is also much silk weaving. The chief manufacturing region is in the northwest, near Germany, While the principal agricul-

tural sections are in the central and eastern parts.

While there has been much progress in manufacturing in recent years, one reason as the second for so little is found in the lack of education among the people. Much of the manufacturing is still done by hand, or by very simple machines.

Another reason for so little manufacturing is that conveniences for transportation are so poor. Since the Danube cuts through the mountains on both the east and the west side of the empire, the most natural trade routes lead either down this river into the Black Sea, or else northward and westward into Germany, and thence down the Elbe or

Rhine valleys. The fact that the Danube is navigable from Germany to its mouth adds greatly to the value of these routes. But goods taken in either direction must pass through foreign ports. What disadvantage do you see in that fact?

The outlets by sea are still less convenient. Although Austria-Hungary is next in size to Russia among European nations, it has but little seacoast. Estimate its length. And, what is still worse, the coast is very difficult to reach from the interior on account of rugged mountains that rise from the very seashore. Largely for this reason



Fig. 448. — A view in Vienna showing some of the fine public buildings.

the ocean commerce of the empire is much less than that of other large European countries. By far the greater part of the foreign trade is carried on through German ports. One can readily understand, therefore, why Austria-Hungary has comparatively little manufacturing, and no large colonies.

While there are many small cities in this empire, there are surprisingly few large ones. The two largest, VI- principal cities ENNA, the capital of Austria, and BUDAPEST, the capital of Hungary, are on the Danube River and not on the seacoast. The reasons for this have just been suggested. State them.

VIENNA, which is larger than Philadelphia, is the greatest city in Austria-Hun-

gary and the fourth in size in Europe. main reason for its size is the fact that it is the capital of a great empire, 1. Vienna and is located on a large river in the central part of Europe. Moreover, it is situated at an opening between mountains, through which, from the earliest times, the best routes have passed from western Europe to Asia, and from northern Europe Mediterranean. The railways which lead from St. Petersburg to Rome, and from Berlin and Paris to Constantinople, converge toward this point, making the city a great railway and trade center.

Vienna is a beautiful city, with many fine public buildings (Fig. 448), including the palace of the emperor and some noted museums. The well-known University of Vienna is also located here. As in most large cities, there is much manufacturing of various kinds.

BUDAPEST, consisting of two towns (Buda and Pest), on opposite banks of the Danube,

a. Budapest is the seat of the Hungarian government and the home of the Emperor for a part of each year. The city lies on the edge of the fertile wheatraising plains of the Danube, and, like Odessa on the Black Sea, is engaged in flour manufacture and grain shipment.

PRAGUE, the third city of Austria-Hungary, is situated on the navigable

8. Prague

Elbe, which has been an important trade route since early times. Located in the midst of a rich mineral region, it is a noted manufacturing center.

TRIESTE is the largest Austrian seaport. Although separated from the main part of 4. Trieste and the country by mountain Fiume ranges, it is connected with the interior by a railway. The pass which this railway follows in crossing the mountains was the route of entrance to the Danube Valley, even as far back as the time of the Roman Empire. FIUME, southeast of Trieste, has an excellent harbor, but has little trade and is a small town.

1. Describe the surface features of this empire 2. The climate. 3. Tell about the mixture of races here. 4. Give reasons for such a mixture. 5. What is the nature of the government? 6. State the principal facts about lumbering and agriculture 7. Mining. 8. The extent and kinds of manufacturing. 9. Give reasons why there is so little manufacturing. 10. Locate and give the principal facts about Vienna. 11. Budapest. 12. Prague 13. Trieste and Fiume. 14. What and where is Liechtenstein?

1. What is the relative importance of the Danub be and the Rhine rivers? 2. Find some Bohemia nglass, to see how beautiful it is.
3. In an atlas look up Austria-Hungary to find the portions which are called Tyro Moravia, Bohemia, Bosnia, Herzegovina, and Transylvania.
4. Look up some facts about the histor of Poland.
5. Find out something about the Triple leadling.
6. Read about the influence of Empero francis Joseph in holding the different parts of the empire together.
7. Find out something about the Nossuth.

XII. THE BALKAN PENINSULA (Fig. 416 -

1. What countries border Roumania (Fig. 416)
2. Name the countries south of the Danube.
3. What does the relief map (Fig. 360) tell you about the surface of each?
4. What can you expect as to the temperature of this peninsula? Why? As to the rainfall? Why
5. Compare the number of large cities with the number in Germany and Italy. What conclusions do you draw concerning the occupations of the people?
6. Compare the area of Turkey in Europe with that of your own state.

This double-pointed peninsula, called the Balkan Peninsula, is bounded on one side by the Adriatic and Mediterra-Boundaries and nean seas, on another by the surface Ægean and Black seas; but, features unlike other European peninsulas, it has a very long land boundary. Trace this boundary.

Throughout almost its entire extent the surface of the Balkan Peninsula is mountainous, which offers an explanation of the large number of separate countries here. How? Many of the valleys are suited to

agriculture, the most extensive being the plains of the Danube in Roumania and Bulgaria.

The climate varies greatly from seashore to interior, and from valley to mountain. Along the southern coast the Climate winters are mild, as elsewhere near the Mediterranean. But in the northeast, near Russia, hot summers are followed by cold winters, when icy winds sweep down

from the Russian steppes and the Danube freezes over.

In so mountainous a land there is also much variation in rainfall. On the western slopes — for example, near the shores of the Adriatic — there is an abundance of rain; but on the east coast and in the interior valleys, especially in Greece, there is so little rain that agriculture depends upon irrigation. Why is this true of Greece especially (p. 262)?

The eastern branch of the Balkan Peninsula comes so close

Closeness to Asia; effects On plants, animals, and People

to Asia that it has been called a "bridge" between Europe and Asia. At two points, the Dardanelles and

the Bosporus (Fig. 452), the continents are separated only by narrow Animals and plants have Btraits.

crossed these barriers so easily, that there is a mixture of European and Asiatic species in that part of Europe.

This region has also been a bridge for the passage of many peoples. Romans, various tribes of Slavs, and finally the Mohammedan Turks from Asia, have brought the Balkan Peninsula under their rule. Wherever the Turks went, they brought ruin; and for Four centuries, while the rest of Europe was advancing, they held this region in such control that almost all progress was checked. During the nineteenth century, however, many of its people have thrown off the Turkish yoke, so that the peninsula is now divided among several nations, and Turkey in Europe is less than one quarter as large as it was a hundred years

Aside from Turkey, the separate countries that have been formed are Montenegro, Servia, Roumania, Bulgaria, Countries now and Greece. Each of these is occupying the now entirely independent, Bul- peninsula

garia being the last to throw off the Turkish yoke in 1908.

The tiny country of Montenegro, which is smaller than the state of Connecticut, has maintained its independence largely
Montenegro

because of its situation

among the mountains. The country is of slight importance; its soil is so poor that there is little agriculture; there is less manufacturing, and not a single railway. The principal occupation is cattle raising. CET-TINJE, the capital, has a population of less than five thousand.

> Bordering on southern Hungary, Servia shares some of the Servia advantages 1. Agriculture of that country. Since much of its surface is rugged and heavily forested, only a small portion is cultivated. Among the leading products are corn, wheat,

and other grains, reminding us of Hungary. There is also much fruit, especially grapes and plums, which, when dried, are sold as raisins and prunes. Many cattle, sheep, and pigs are raised for export, the pigs being allowed to roam in the oak and beech Why there? forests.

The industries of Servia are only partly developed. For example, although coal, iron, lead, silver, gold, and other metals are known to exist, there is very little mining; 2. Other indus-tries and chief nor is there much manufacturing. city It will require more time to recover from the centuries of Turkish misrule.

The capital of the kingdom is BELGRADE, a city



Fig. 449. - A Greek peasant in native costume.

finely situated upon the Danube, and owing its importance partly to easy transportation on that river.



Fig. 450.— A Roumanian peasant in native costume.

These two countries have much in common, although the Danube separates them Roumania and for a long distance. They together control its lower course, 1. Agriculture a fact of much importance to Austria-Hungary. Why?

Broad plains, suited to agriculture, border the Danube in both countries, though the plains are far more extensive in Roumania than in Bulgaria. Naturally, therefore, there is much farming. In both countries wheat and other grains are among the chief crops. The warmer climate of Bulgaria, south of the Balkan Mountains, permits the culture of products that cannot be raised in Roumania; for example, the mulberry for the silkworm, and roses for the valuable perfume, attar of roses.

Many sheep, as well as other live stock, are raised in each country; in fact, herding is almost the sole industry on the barren steppes of eastern Roumania.

There are large tracts of forest in each country; but there is more in Bulgaria, owing to its rugged

surface, than in Roumania. Each country has valuable mineral deposits; but, as in Servia, there is little mining. Nor is there much manufacturing, except such hand work as the manufacture of Turkish cities; also chiefficities

With such slight development of the resource s, there are few large cities. By far the largest i is is BUCHAREST, the capital of Roumania. Find the capital of Bulgaria.

The Turks, who are Mohammedans, have ideas and customs that are very unlike those of other Europeans. They are unprogressive, and are unwilling to grant rights to the many Christians who live in the people, and of government tan, until recently has had absolute power which he has often used very cruelly; and the government has been the worst in Europe. Very recently it has begun to improve. The majority of the Turks are botten ignorant and poor; and they have not been encouraged to develop the resources of their land.

The great forest tracts that once covered the mountain slopes have been nearly destroyed; and broad areas of farm land are cultivated by the crude methods of early centuries.



Fig. 451. - A Turkish woman in Constantinople.

Among the principal crops are wheat, corn, flax, hemp, and tobacco. Figs and grapes, for raisins, are also raised. Cattle and

heep are numerous, and tame buffaloes and oxen are in common use as farm animals.

As in other slightly developed states, Turkey suplies little except raw materials. Even valuable ineral deposits are almost unworked, and there is tile manufacturing aside from hand-made goods. mong the latter are the famous Turkish rugs, and me very beautiful articles in leather and metal, the capital of the Roman Empire. For centuries it was noted as one of the richest and most prosperous cities of Europe.

After being captured by the Turks, however, it lost much of its beauty; but some of the ancient splendor still remains (Fig. 452). There are palaces, mosques, and other interesting and costly buildings; but side by side with them are the dwellings of the common people, who live in the most squalid pov-



Fig. 452.—Constantinople and the Bosporus. The land on the other side of the strait is in Asia.

showing that the Turks have much artistic skill. With so little industry there is, naturally, almost so means of transportation; in fact, the roads are sverywhere bad, and railways are almost lacking.

CONSTANTINOPLE, the capital of the Ottoman Empire, as Turkey is often called, has L. Calef city been famous for many centural Its location ries. Being situated on the beautiful, river-like outlet of the Black Sea, called the Bosporus (Fig. 452), it commands the channel through which the commerce of the Black Sea must pass. This is a natural site for a city; for it is the point where the crossing can best be made from Europe to Asia.

The site of Constantinople is so favorable for a city that it was the seat of a Greek colony even before the days of Christ.

Later the Roman Emperor Constantine named the city after himself

Constantine and polis, meaning city), and made it

erty. The houses, street scenes, people, and customs remind one of Asia rather than of Europe. How does it rank in size with other large European cities? With the large cities of the United States? (See table, Appendix, p. 426.)

Since the Turks entered Europe from Asia, seizing countries that belonged to Christians, it might seem that the Great Powers of Europe would unite to drive them back. This has often been threatened, and the fact that it has never been done is not because Turkey is considered a good neighbor. It is really because of the jealousies among the Powers themselves. Russia would like to get possession of the Bosporus; but no one of the Great Powers is willing that any other shall obtain control of that region.

The southern end of the Balkan Peninsula

is occupied by Greece. Owing to many short mountain ranges, extending in difGreece ferent directions, the surface
1. Surface and of Greece is quite rugged, and climate large sections are unfit for farming. Yet there are many small, fertile valleys. The coast line is very irregular, with numerous peninsulas, islands, deep bays, and fine harbors, formed by the sinking of the irregular land.

The Mediterranean causes a warm, pleasant climate, as in southern Italy. In Greece,

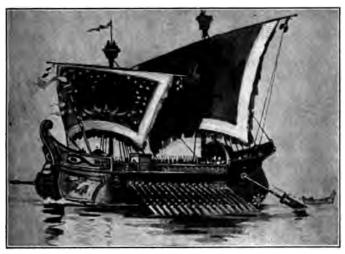


Fig. 453.—A Greek ship, used 700 years before Christ. Besides sails, long oars were used for driving the boat through the water.

however, as in Italy, the rainfall, which is moderate in winter, is so light in summer that irrigation is necessary for agriculture.

It was in this small peninsula that the marvelous civilization of ancient Hellas, or Greece, was developed. While that the ancient Greeks enjoyed Greeks lived may not seem to have been very favorable, they were far better than they at first appear. The sea and mountains protected them from foreign enemies; and at the same time the sea, by means of the many fine harbors and protected inlets, so connected the people that it was easy for them to carry on peaceful commerce.

In other parts of the world strong nations have developed under such conditions as these. It was true, for instance, in Scandinavia, in the British Isles, and in the Spanish and Italian peninsulas. It is also true in the Japanese Islands, the home of the most highly developed Asiatics.

Because of their ability to navigate the inland seas, the Greeks, in very early times (Fig. 453), kept closely in 3. Barly histouch with the people from tary of Greece whom they had separated, and who stil 1

dwelt opposite them, on the coast of Asia. They improved upon the arts and customs of their mother country, and in time became the greatest power in the then known world. In those ancient days they developed a civilization which, in spite of all our progress, still excels our own in very important respects.

They cruised about the shores of the Mediterranean and became explorers at a time when most of Europe was occupied by savages or barbarians. They entered into trade relations with their neighbors, taught them Greek arts, and established many colonies. Among these

were some colonies in Italy, through which the Greeks exerted a strong influence upon the Romans.

Rome finally conquered Greece, and became the leading country of the world spreading her civilization far 4. Itslater over Europe. It must be history remembered, though, that much of this scivilization was really derived from the Greeks. After the decline of the Roman Empire, other people from the north invaded Greece; and finally the Turks entered the country and carried ruin to this, as to other parts of the Balkan Peninsula. Greece is now independent, and is a limited monarchy.

In this little country there are few natural resources. There is no coal, and therefore 5. Principal little manufacturing. There is some mining, as of iron ore, lead, and zinc; but the principal occupations are herding and farming. Large numbers of sheep and goats are raised; and the chief farm products are grain, tobacco, olives, and

and in securing bath sponges from the shallow sea bottom among the Greek islands.

ATHENS, the capital and most important city, with about a hundred and sixty-seven thousand inhabitants, is situated inland six miles from its port, PIRÆUS. The principal streets of the



Fig. 454. - The Acropolis at Athens.

fruits. Among the latter is the small variety of grape known as the currant. Currants, together with raisin grapes, are cultivated in large quantities on the steep hillsides; after being gathered they are spread out to dry, and are marketed as dried fruit.

The neighborhood of the sea has led the Greeks to continue their seafaring life, and they still carry on an extensive foreign trade. Many are also engaged in fishing,

present city are quite modern; but ruins of ancient Athens are still numerous. The most noted buildings, and some of the finest temples of ancient Greece, stood upon the Acropolis (Fig. 454), a level-topped rocky hill with steep sides. This stronghold was the natural center of settlements on the surrounding plain.

The many islands in the neighborhood of Greece are either mountain crests or volcanic cones. Now and then we hear of an earthquake shock in this

island region, or archipelago, showing that the mountains are still growing. The largest island near Greece is Crete (Fig. 358), which, like the smaller islands, is inhabited mainly by Greeks. It is still controlled by the Turks. The inhabitants are engaged in industries similar to those of Greece.

1. Describe the boundaries and surface of the Balkan Peninsula. 2. The climate. 3. How close is this peninsula to Asia, and what Review have been some of the effects of this **Ouestions** location on plants, animals, and people? 4. What countries now occupy this peninsula? Locate each. 5. Tell what you can about Montenegro. 6. About agriculture in Servia. 7. What are the other industries? 8. Name and locate the chief city. 9. What are the agricultural products of Roumania and Bulgaria? 10. What are the other industries? 11. The chief cities? 12. What can you tell about the character of the people and government of Turkey in Europe? 13. What are the industries? 14. Why is the location of its chief city so favorable? 15. State the history and present importance of this city. 16. Why have not the Great Powers driven the Turks out of Europe? 17. Describe the surface and climate of Greece. 18. Show what advantages the ancient Greeks enjoyed. 19. Give facts in the early history of Greece. 20. In its later history. 21. What are the principal industries? 22. Tell about the leading city. 23. What about the islands near Greece?

1. What reasons can you suggest for the fact that these eastern countries are in a constant state of unrest? 2. Turkey is sometimes referred to as the "sick man of Europe." Why? 3. How was Greece well situated for the trade of the ancient world? 4. Learn some facts about Homer, Plato, and other noted Greeks. 5. Read about the defense of the Pass of Thermopylæ. 6. What reasons can you suggest for the fact that ancient Greece was divided into several independent states, not unlike our own, but lacking a federal union? 7. Name the principal cities in the Balkan Peninsula, and locate each.

1. Compare the climate of western Europe with that of the west coast of North America (p. 211).

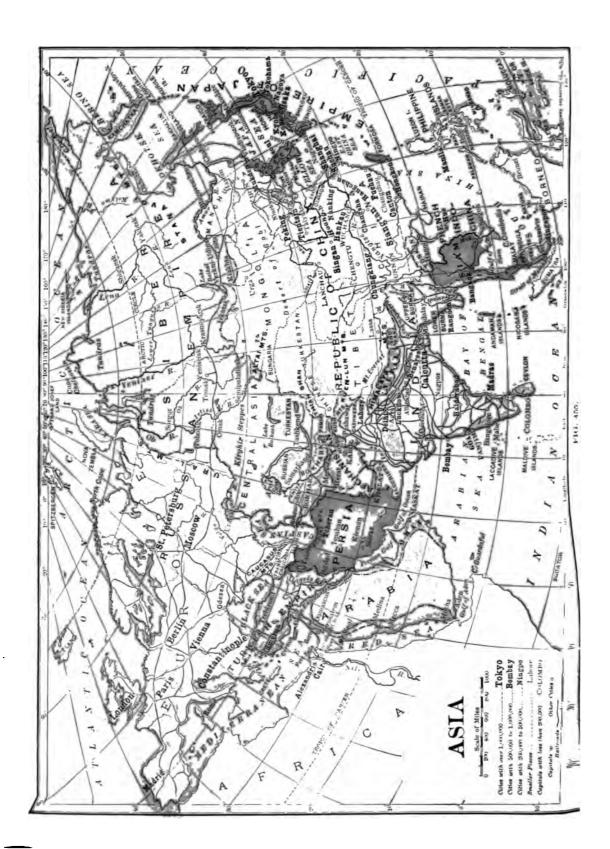
General review questions and comparisons with North America

America

1. Compare the climate of western Europe with America (p. 211).

2. Make the same comparison for the eastern parts of the two continents. 3. What European countries were covered, either wholly or in part, by an ice sheet in the Glacial Period (Fig. 363)? 4. Does Europe or North America have the advantage in regard to irregular coast line? How is it an advan-

tage? 5. Name and locate the principal mounta ranges in each continent. Which continent has tl advantage as to the direction of the ranges? WI (p. 261)? 6. Name and locate the principal rive in each continent. Which are the largest in each case? 7. Draw an outline map of Europe, insen ing the boundaries and names of the countrie 8. How do our larger Western States compare area with France and Germany? In population 9. Which are the two or three most progressi. countries of Europe? Give reasons. 10. What the prevailing kind of government in Europe? North America? 11. Which European count has the best location for world commerce? Wh 12. Which is best situated for continental comerce? Why (p. 308)? 13. Which country North America has the most favorable position £ trade? How? 14. Compare in population the fi largest European cities with the five largest in Nor-America (Appendix, p. 426). 15. State the maadvantages of the position of each of these te cities. 16. Name and locate the five largest se ports of Europe (Fig. 358). 17. How do they cor pare in population with New York, Philadelphi Boston, Baltimore, and San Francisco? 18. Nan and locate the five largest interior cities, and con pare their population with that of Chicago, St. Loui Cleveland, Buffalo, and Cincinnati. 19. What citie of Europe and North America are near the 46th pa allel of latitude? The 50th? The 60th? 20. Nan some agricultural products common to both Euroj and the United States. 21. Name others that a found in the United States, but not in Europe. Wh this difference? 22. Name the chief wheat-produ ing countries of Europe. 23. In what countries Europe is raw silk produced? Why do we not rais silkworms (p. 286)? 24. In what countries are sug beets extensively produced? 25. In what countries is most lumber obtained? 26. Make a list of th European countries which have extensive coal d posits. 27. Which countries have little or none What is the effect on the industries in each case 28. Which countries have little or no mining 29. Which countries have important manufactu ing industries? Which have very little manufa turing? Give reasons for this difference. 30. Wit which group would the United States be classed wit regard to mining and manufacturing? 31. Whic of the European nations have you seen represente on our streets? 32. Write a paper stating some the advantages that we enjoy over European cou: tries. 33. State some of the advantages that the enjoy over us. 34. Which one of the Europes countries would you prefer to visit? Why?



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PART V. ASIA, AFRICA, AUSTRALIA, AND ISLAND GROUPS

I. Asia

1. Compare the greatest length and breadth of Asia with that of North America (Fig. 9). 2. Compare its area with that of other continents. (For Areas, see Appendix, P. 424.) 3. Where are the mountains? 4. The Plains? 5. Draw an outline map of Asia, adding the names and boundaries of the countries. 6. Find

three large inland seas and lakes. Which have no outlets? 7. Find the area of China, India, Siberia. Compare each with the United States in area. 8. What facts concerning the climate do you discover from the map? 9. What does the general absence of railways tell about the development of the people? In what parts have there probably been most progress? 10. Name some of the large islands near Asia. Name some of the largest islands between Asia and Australia (Fig. 517).



Fig. 457. — Relief map of Eurasia.

1. General Facts

Asia, the largest of the continents, includes almost one third of the land of the Size and globe. Its immense area is position shown by the fact that it reaches from near the equator to a point halfway between the Arctic Circle and the north pole. How many degrees of latitude is that? How many miles? In what

Fig. 458. — Fujiyama, a very perfect volcanic cone in Japan.

zones, therefore, does Asia lie? Is the same true of any other continent?

Find the Isthmus of Suez, which connects At one point Asia Asia with Africa. reaches within fifty miles of North America. Find that place. What is the name of the strait separating these two continents (Fig. 2)? The distance from the Suez Canal to Bering Strait is six thousand miles. There are so many degrees of longitude included in this distance, that, according to our plan for standard time, one would need to change his watch ten different times in traveling over it. How many changes are necessary in crossing the United States (Fig. 290)?

Asia resembles Europe in the irregula. If arrangement of its mountains (Fig. 457). While many of them extend east and west, there are others running nearly north and south. Point out examples of each.

The growth of the mountains and plateaus has caused many islands and peninsulas, with gulfs an seas between. The mountains in many parts

Asia are still slowly rising; and at the rocks move and break, earth at quake shocks are common. There are also many volcanoes (Fig. 458) in fact, the islands east and south at east of Asia form the most active volcanic and earthquake region in the world.

Northern and western Asiz are form a vast plain, and there are other smaller g. Principal plains and low lowlands and plateaus; but a highlands large part of the continent of the consists of mountains and high plateaus. Indeed, more than one twelfth of Asia mainly in the central part of the continent, has an elevation above ten thousand feet.

Here are found the Himalayas (meaning abode of snow), whose loftiest peak.

Mount Everest (29,000 feet), is the highest in the world. Locate it. Here, too, are other ranges with peaks rising above valley whose bottoms lie eleven thousand feet above sea level, or higher than most mountains. Between the mountains are table lands, like that of Tibet, which has an elevation of from ten thousand to fifteen thousand feet, some portions being as high as the loftiest peaks of the Alps.

The mountains and high plateaus of central Asia are the source of many large rivers. Why? Note how many rise on the margin of this central highland and flow east, south, and north, to the sea. Name and trace

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each of the large rivers (Fig. 456). Through what countries do they flow? Which of these rivers are probably least waseful? Why?

In so vast a land, with such differences in elevation, there are many different cli-Tropical heat is found in southern rriates. Asia, and here dense forests Climate grow in the belt of calms (Fig. 475), and in those places where ocean winds blow over the land. Where winds do not blow from the ocean, however, the climate is very dry and there are broad deserts (Fig. 459.) Most of western Asia is arid for this reason. Much of central

is the largest continent, the continental climate is best developed here. Thus where the Arctic Circle crosses the Lena River, the average temperature in July is 60° and in January 60° below zero, a difference of 120° between summer and winter. This is the lowest winter temperature known in the world, and this point is therefore sometimes called the cold pole of the earth.

Since northern Asia is really a continuation of Europe, the wild plants and animals, as well as the farm products, resemble those 1. How those of Europe.

of northern Asia resemble those The cold northern part of Siberia, of Europe

animals

like northern Europe and America, is a vast expanse of frozen ground, or tundra. To-



Fig. 459. — A carayan on the desert of Persia.

Asia is also arid, since the lofty mountains surrounding the central plateau cause most of the vapor to condense on their seaward slopes.

A large part of Asia has a temperate, and some of it even a frigid, climate, as in North America and Europe. For example, the climate at Peking resembles that of the northeastern part of the United States; and the climate of the plains of central Siberia resembles that of the plains of Minnesota and Dakota.

Such a climate, with warm summers and very cold winters, is called continental; and since Asia

ward the south the tundra grades into the forest; low stunted trees appear first, followed by true forests of evergreens, birches, poplars, etc. Farther south where the rainfall is light and where, in the warmer climate, evaporation is more rapid, the soil is too dry in summer for forests. This is the region of the steppes, which are covered with luxuriant grass in the north, but which grade into the barren desert farther south.

In southern Asia, on the other hand, from Arabia to China, the plants and animals resemble those of Africa rather than of Europe and 2. How and northern Asia. One reason for this why those of is that southern Asia has a tropical southern Asia climate, like Africa; another is that resemble those a mountain and desert barrier sepa- of Africa rates northern from southern Asia. Trace this barrier on Figure 457.

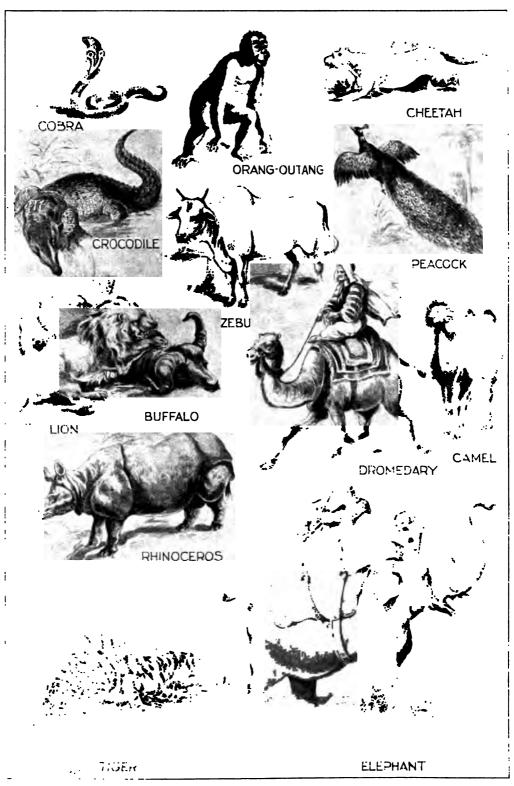


Fig. 460. Some of the wird andmars of Sila.

ASIA 345

As in Africa, this arid portion, which includes Arabia, Persia, and central Asia, is the home of the camel (Fig. 460), while the elephant and rhinoceros (Fig. 460) live on the savannas and in the tropical jungles. Southern Asia is also the home of the fierce tiger and numerous species of monkeys and apes (Fig. 460).

It was in Asia, probably the seat of the oldest civilization of mankind, that men

S. Our debt to
A sia for domesticated plants
and animals

first learned to make use of some of the animals and plants that are now so valuable. No one knows who it was that

first tamed the wild animals, such as the horse, dog, and sheep, which now are used all over the world. Nor is it known who first cultivated the wheat and many other useful plants; but it is certain that the people of Asia knew their value long before Europeans became civilized. Centuries before the time of Christ the people of India grew cotton and wove it into cloth; and they kept sheep, horses, cattle, and goats. Tea and oranges were introduced into Europe from China, and the lemon tree came from India.

The extent to which the Asiatic People have learned to make use of animals is shown by

Comesticated
Dimals in Asia

the following facts: On the frozen tundras where no large domesticated animals thrive, the reindeer not only

work animal. The camel, whose original home seems to have been Asia, makes it possible for man to live even in the desert (Figs. 459 and 489). Elephants are domesticated and made to work in the dense tropical forests (Figs. 461 and 480); and the buffalo is used as a work animal in hot, damp lands where horses find the climate trying (Fig. 481). Among the lofty plateaus and mountains, where horse find the slopes so steep, that other work animals cannot be used, the yak is domesticated. Upon the steppes, where herds of cattle, sheep, and youts are kept, the horse is so necessary to the herder that the men almost live in the saddle. Indeed, the word Cossack, applied to Russians who dwell on the

steppes, means horseman. The Asiatic people also have swine, poultry, dogs, cats, and other domestic animals.

More than half the human race, or over eight hundred and fifty million persons, live in Asia. But in spite of this People vast number, most of the con1. Their numtinent is sparsely settled. The ber, and their mountain slopes, the cold plateaus, the steppes, deserts, forests, and tundras support but few inhabitants (Fig. 462). Nearly seven eighths of the Asiatic people



Fig. 461. — The elephant drawing a load of cocoanuts in Ceylon.

dwell near the coast, especially on the river flood plains and deltas of the south and east. Almost every foot of land there is cultivated, and soil for gardens is even carried to boats on the rivers.

Three fourths of the Asiatic people belong to the Yellow division of the human race (p. 232), which they belong, and their chiefly whites.

2. The races to which they belong, and their religion

There are great differences in religion between these people and Europeans. Although the Christian religion started in southwestern Asia, and spread freely along the Mediterranean, it made little headway across the desert and mountain lands to the east. One difficulty was that there were still older, well-established religions in southern and eastern Asia. At present two thirds of the Asiatic people are either Brahmans or Buddhists (p. 233), as their ancestors have been for many centuries. Many others are of the Mohammedan faith, of the Euphrates River, and of the India and Chinese rivers, had a fertile soil and a abundance of water for irrigation. Moreover, these fertile spots were protected from invasion by ocean, desert, and mountain barriers, so that the inhabitants were ablute cultivate the arts of peace. Other centers, protected from the attacks of wander

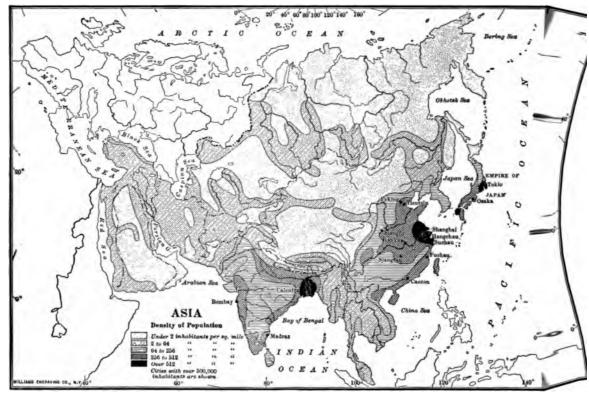


Fig. 462.

which had its start in Asia, long after Christ (p. 234). This religion has not only taken the place of the Jewish and Christian religions in most of western Asia, where they started, but has spread far to the eastward. Some of the natives even of the Philippine Islands are Mohammedans.

One reason why the people of Asia made

8. Reasons for such early progress toward their early progres civilization is the favorable situation of certain parts of the continent. For example, the flood plains

ing hordes, are found among the shut-invalleys of the lofty mountains; and here also, it was possible for people to advance in civilization.

Another reason for their progress is the fact that they have always had great ability. That this is true is indicated by the rapid advance that has been made in Japan and India in recent years.

In spite of their early progress and their great ability, have fallen so the Asiatic people have long far behind ASIA 847

still, or have been falling behind, Europeans were making rapid adin civilization.

re are two reasons for this that are lly important. One is the fact that static people have been so cut off from it of the world that they have been to learn from others. While Eurowere exploring the world in all direcand while they were founding colonies

rrying on profitable comwith foreigners, the of Asia did little or g in these directions. econd reason is that they iot wanted to learn from Many Asiatics, people. ne Chinese, for example, elt that their civilization ie best, and have thereren refused to learn from No wonder that, under conditions, the Asiatics stood still, while Eurohave made rapid advance. vever, these people can ve rapidly, if they will. And there s of many signs that ogress: re now determined to do The Japanese and the of India have already great progress, and the se are beginning to do t seems probable that the

of Asia, in general, will rapidly apthe same level of civilization that uropeans have reached.

The Turkish, or Ottoman, Empire

hough Constantinople, the capital of irkish Empire, is in Europe, Turkey is more than ten times as much land a as in Europe.

key in Asia, although now of little importance among nations, is of peculiar interest to us. It

is within this country that many of the places mentioned in the Bible are located (Fig. 465); and here Christ was born, as well as the prophet Mohammed. It was from this center, also, that much of the ancient civilization spread along the shores of the Mediterranean.

A large part of Turkey in Asia is tableland, crossed by short moun- Surface and tain ranges. There are also a climate



Fig. 463.—Persian women making a rug by hand. These people are so backward that they have not learned to use modern machinery; but their hand work is very artistic and beautiful.

number of extinct volcanoes, such as Mount Ararat.

There is little rainfall except along the coast of the Mediterranean and Black seas. The country is, therefore, mainly arid or desert; the streams are usually short and shallow; and there are numerous salt lakes. Point out the two principal rivers (Fig. 455).

Thus the climate is very unfavorable; but the location of the region is also How its posiunfavorable, and in part ex- tion has been a plains its lack of development. disadvantage Asia Minor, the peninsula between the Mediterranean and Black seas, was the pathway for the ancient caravan trade between Europe and Asia. While this brought much commerce, it also led to many invasions, and the region has had a very unfortunate history.

More than five centuries before Christ the country was conquered by the Persians; two centuries later it came under the control of the Greeks; and later still, it became a part of the Roman Empire. With the decline of the Roman Empire came invasions

like the Turkish rugs already mentioned (p. 337), is very beautiful.

SMYRNA is the most important seaport Locate it. Find TREBIZOND, an important port on the Black Sea.



Fig. 464. — Native spinning wheels in Palestine, using the same methods as in the days of Christ.

by wandering Turks, Tartars, and others. It was over this highway that the Mohammedan Turks entered southwestern Europe, carrying destruction wherever they went.

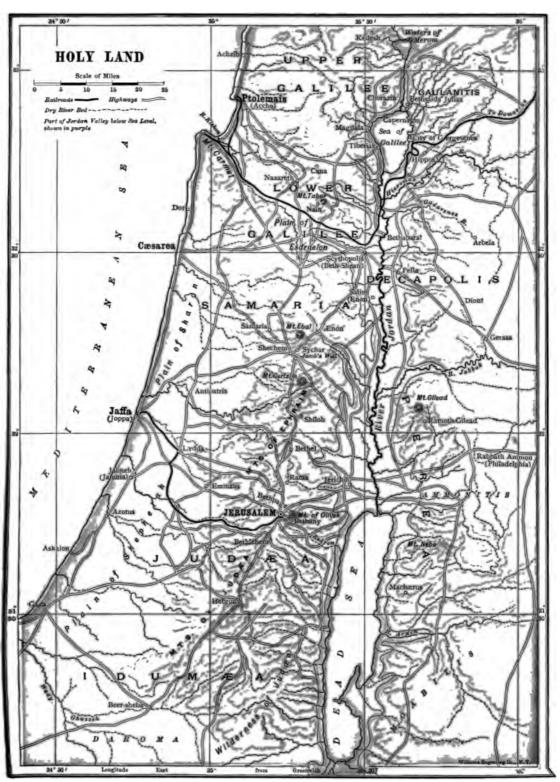
Some of the mountain slopes are covered with forest; but most of the country is open, and suited mainly to Its industries, products, and herding, though there is some chief cities agriculture. In the valleys wheat, grapes, olives, figs, oranges, and cotton are raised, usually by the aid of irrigation. Both the herding and farming are carried on in much the same way as in the time of Christ. The valuable minerals are scarcely worked at all; and there is very little manufacturing except that done by hand (Fig. 464). Some of this work, however

Estimate the length and average breadth of this noted little re- Land gion at the (1) Its area, east end of surface, and the Mediterranean Sea (Fig. 465). How does it compare with Connecticut in area?

Back of a straight ht coast, with no good harbors, lies a narrow or coastal plain. Beyond this are two low mountain ranges, between this lies the remark able depression in whose bottom the Dead Sea is

situated. While the village of Hebron (Fig. 465), on the western mountain range is about three thousand feet above sea level the surface of the Dead Sea, a few miles to the east, is over thirteen hundred feet below sea level. This is, in fact, the deepest depression on the lands of the world.

Although fed by the river Jordan, which flow out of a fresh-water lake, called the Sea of Galilee (Fig. 466), the water of the Dead Sea is so salt that no fishes can live in it. The salt that it contains makes this water so dense that a person cannot even sink in it. The fact that the Dead Sea is so salt shows how arid the climate is. Otherwise its basin would be filled with water, which, by overflowing, would soon carry off the salt and make a fresh-water lake. The Jordan Valley and Dead Sea lie no farther south than southern Alabama; yet, partly be-



TPTCL ARK



region is so low and inclosed, its climate

: its possession by the Jews, this vas divided into small countries,

int often under hap- the rule of their more l and powerful s in northeastica, the Egyp-Then the Jews this "promised ind created a which rose to st power under domon. It was it many of the the Old Testaook place, inthe advance in

from the wornany gods to the belief in one alll God. Persians, Egyptians, and later ruled over Palestine; and it

some of the places marked on the map (Fig. 465)?

At that time, as we learn from the Bible, the region was highly developed. Wheat



Fig. 466. - Tiberias and the Sea of Galilee in the Holy Land.

was raised upon the uplands, and olives, figs, and grapes in the valleys, (3) Former while herds of sheep were products and ng the control of the latter people | pastured on the plateaus and commerce of Re- Palestine

mountains. call events from the Bible that indicate these occupations.

Palestine lay on the great caravan route which, leading from Egypt to the distant East, ran northward, as far as DAMASCUS (Fig. 455), in order to avoid the Syrian desert. Throngs of people, therefore, passed this way. JERUSALEM (Fig. 468), the capital, was a large city, situated upon a lofty elevation that made it an important stronghold.

Palestine is now visited by many Christians, and also by Mohammedan pilgrims who

medan pilgrims who believe that Mohammed ascended to heaven from Jerumethod of travel salem. Very little but ruins is to be seen, for much of the country, once "flowing with



Fig. 467. - Bethlehem, where Christ was born.

hrist was born at BETHLEHEM What events in the life of can you mention that occurred at | milk and honey," is now deserted. The usual mode of travel is by mule or camel, as in olden times. A short railway now climbs the mountains from Jaffa, on the seacoast, to Jerusalem, and another has been begun following the old caravan route past Nazareth and the Sea of Galilee to Damascus. Trace these two lines.

This region, which includes the fertile valleys of the Tigris and Euphrates rivers,

2. Mesopotamia has suffered the same fate as the rest of Turkey in Asia.

(1) Its ancient It was formerly a country of great resources, crossed by a network of irrigation canals, and was called

3. Arabia, Persia, and Afghanistan

The Arabian peninsula is a plateau, several thousand feet in elevation, Arabia with a fringe of mountains 1. Surface and (Figs. 456 and 457), especially climate in the south and west. What waters border Arabia?

The climate is hot along the coast, but cooler on the plateau and among the mountains. A large part of the interior is desert, and almost everywhere the rainfall is light. Why (p. 211)?

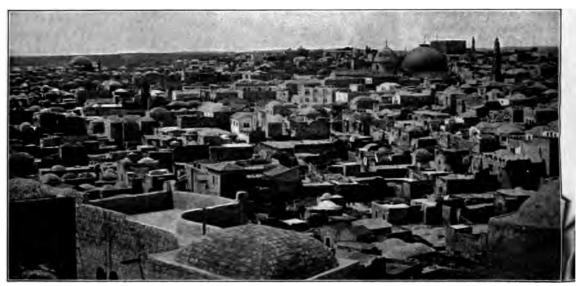


Fig. 468. — A view of Jerusalem as it appears to-day.

in the Bible "a garden of the Lord." But it has been overrun by the Arabs and Turks, until it is now almost a waste. Babylon and Nineveh, once great cities, and the seats of a wonderful civilization, are now marked only by mounds of ruins. The site of the Tower of Babel is believed to be at Babylon, and the ruins of the palace of Nebuchadnezzar are still to be seen.

Under such conditions there can be little commerce, though steamboats can go up the Tigris as (2) Its present far as BAGDAD. This city, situated importance on the caravan route to the East, was of much importance in ancient times. Some of its former importance may be brought back by the building of a railway from Smyrna to the Red Sea.

Since the coast line is very regular, there are few harbors, and therefore few coastal cities. From early 2. Its former times, however, the inclosed importance seas which border the peninsula were favorable to navigation, as was the Mediterranean. Having learned the art of navigation, it is natural that, even in very early days, Arabian ships should have carried on commerce with Africa, India, and eastern Asia. For centuries the two great routes of trade between western Europe and the East Indies passed Arabia, one on the eastern side, through the Persian Gulf; the other on the west, through the Red Sea.

MECCA, a city about fifty miles from the west coast, is sacred to all Mohammedans.

It was here that Mohammed was born, and every Mohammedan wishes to make a pilgrimage to it at least once during his lifetime. Most of these pilgrims come by sea, and every year the city, as well as the roads leading to it, are crowded with them.

With such an unfavorable climate there are, naturally, few 4. Population people in Arabia, and products and these are largely Coffee is raised in nomadic. the southwest, near MOCHA; the date palm flourishes in many places, and fruits and vegetables are produced in many of the valleys. Agriculture is possible in most parts only by means of irrigation. Cattle, sheep, goats, donkeys, horses, and camels are raised in large numbers, the last two being celebrated for

their excellent quali-

ties. There is very little commerce, and there are, of course, no navigable rivers. Why?

Most of the Arabian peninsula is independent of Turkey, though it has no well-organized government of its own. Turkey controls the west coast and the Persian Gulf coast as far as Oman, a very small independent state whose capital is the seaport of Maskat.

The British have a foothold on the southwestern coast at Aden, one of their most important coaling stations. The climate here is so dry that there is not enough rainfall to supply drinking water, although great reservoirs have been built to store it. Part of the water for the city is obtained by condensing steam made by boiling sea water.

Persia, like Arabia, is an elevated tablePersia land, with large tracts of desert

that are of little or no use to
man. The arid climate pre-

vents the formation of large rivers, but the rains and snows of the mountains supply enough water for irrigation in some of the broad valleys. There is so little rainfall, however, and evaporation is so rapid during the hot summer, that water for irrigation is often led from the mountains in underground

tunnels. Why should tunnels be better than open ditches?

The best agricultural district is near the Caspian Sea, where there is rainfall enough 2. Agricultural for crops. The products

chief farm products are
tobacco, wheat, barley,
cotton, and opium.
Much raw silk is also
produced, and roses are
cultivated for the
manufacture of attar of
roses.

Nearly two million Persians belong to nomadic tribes (Figs. 459 and 470) which roam about the desert, dwelling in tents, and herding goats, sheep, and other animals.



Fig. 469. - A Persian girl in native costume.

Among the mineral deposits is the precious stone, turquoise, which has been obtained here for many centuries. Other valuable minerals are known to exist in Persia, but the country is so backward that there is little mining. Precious pearls and pearl shells are found in the waters of the Persian Gulf.

Almost the only manufacturing is that done by hand; and the Persians, like the Turks, do some very beautiful hand weaving, making such articles as shawls and rugs. Their carving and inlaid metal and wood work are also very artistic.

The government of Persia has long resembled that of Turkey, and has therefore been very bad. The ruler, the 4. Government, Shah, has been an absolute and chief city monarch, controlling the lives and property of his subjects, who are mostly Mohammedans. Recently, however, there has been a

popular uprising and a demand for a more representative government. The Shah has promised a reform and has agreed to allow the people a voice in making their laws.

TEHERAN, the capital, has some beautiful mosques, but the dwelling houses, which



Fig. 470. - Persian nomads and their home.

are made of sun-dried bricks, and face narrow, filthy streets, are very unattractive.

This country, "one of the waste places of the world," is a region of sand, bare rocks, and snow-capped mountains. Only in the valleys is the soil made to yield a harvest; and even there the cold, blustering winters and the dry, scorching summers make the worst of climates. Under such unfavorable conditions a race

climates. Under such unfavorable conditions a race of people has developed which is noted for being hardy, stubborn, brave, and cruel.

Like other Asiatic countries so far studied, Afghanistan is badly governed. The ruler, the merciless Amir, keeps his authority by means of the terror which he inspires. His seat of government is at KABUL, nestled among lofty mountains.

Since Great Britain has pushed her Indian frontier northward, while Russia has advanced on the opposite side of Afghanistan, this country is often called the "buffer state" between these two rival powers in Asia.

4. Russia in Asia

This vast section of the Russian Empire includes about one eighth of Area and the land surface of the globe. divisions

There are several divisions, such as Turkestan and the dependencies of Bokhara and

Khiva in the southern part; but by far the largest is Siberia, which is a million square miles larger than E prope. It is even larger than the United States, Mexico, a mod Central America combinated Yet Siberia has less than continued the United States alone.

Russia in Asia has the sabelts of climate as Russia
Europe (p. 303). Principal be South of the of climate, tundras is a vast of plant and forest belt, in animal life which live many valuable furbearing animals, such as the sable, ermine, and fox. Fe people live here except hunter and lumbermen. There are

some farms in the clearings, and when the forests are removed, this will doubtless become a great farming region.

Still farther south are the broad Kirghisteppes. There is rainfall enough for agriculture in the north, but toward the south in Turkestan and Bokhara, the country becomes more and more arid. Here are extensive deserts, and arid wastes, with cases where irrigation is possible. Herding in the principal industry on the arid steppes and deserts, sheep, horses, cattle, and camels being raised. On the oases, corn, fruits, tobacco, cotton, hemp, and the silkworm are raised.

In the past Siberia has had a reputation mainly as a source of minerals, and as a place of exile for Russians Importance whom the government wished in the past to punish. Gold has been found in a

ber of places, as in the Urals and near e Baikal, the largest fresh-water lake on continent. Other valuable minerals are id here, but as yet there has been little ing, except in the western part near sia. The southern provinces have been igh importance in the past, and Bokhara, igh a Russian dependency, still has its ruler. It was once a powerful state highly developed industries, and to is one of the most progressive parts of sia in Asia.

he immense territory of Russia in Asia great resources; but there has been not more little advance except in the rtant southern part. Perhaps the f reason for this has been the lack of sportation. For a long time there were ailroads, and the rivers have been of s use for navigation. In the arid south are small, and in the north, though 3, they flow into a frozen ocean, and are iselves frozen for many months every This difficulty of transportation has out settlers; and it has made come very difficult. There was no object

great Siberian railway. Trace this railway on Figure 455. How long is it? On the one side it connects Siberia with Europe; on the other provements, with the Pacific. Other railways have been built in the for the future southern part of the country, and still others

have been planned.

In order to have a port on Pacific the which should be free from ice, Russia crossed the Chinese territory, in Manchuria, to PORT ARTHUR. China was too weak to prevent Russia also began to push her influence into Korea.



Fig. 471.— A Yakout woman from the cold tundra region of Siberia.

when Japan objected, and this led to a war in which Russia was badly defeated by Japan.

This war has seriously checked the progress of Russia in Asia, but it cannot be for a long time.



Fig. 472.—Russian carriages in a Siberian town.

ising large crops, if some of the prodcould not be sent away and exchanged other things.

was largely to overcome this difficulty; the Russian government built the

Now that it is possible for people to enter this vast territory to develop farms and mines, and to ship the surplus products, Russia in Asia will doubtless advance rapidly. The one great difficulty still in the way is the bad government, which, as you have learned (p. 304), is opposed to the progress of the people.

There are several important cities in Asiatic Russia. The largest in the southwest is TASHKEND, and the Leading cities city of BOKHARA is next in TIFLIS, between the Black and Caspian seas, is really in Asia, though the Russian government classes this region with its European provinces. It is somewhat larger There are a number of than Tashkend. other cities with a population of from fifty to a hundred thousand. In Siberia there are no large cities, though several along the railway, including IRKUTSK and VLADIvostok, are now growing rapidly.

5. The Indian Empire and Ceylon

The Indian Empire includes not only the entire peninsula of India, but the desert Divisions of country of Baluchistan on the the empire west, and fertile Burma on the east. The two little countries of Nepal

Fig. 473. — A family of Indian Brahmans of high caste.

and Bhutan, among the Himalaya Mountains on the north, have retained their independence, largely because they are so protected by the mountains. They are,

however, to some extent under the protection of the Indian Empire.

There are three extensive areas in India of very different altitudes. (1) Most of the peninsula is a plateau, rarely Surface more than two thousand feet features (2) North of the plateau is a broad lowland occupied by the Brahmaputra, Ganges, and Indus rivers, which, like the Po River of Italy, have built up the plains out of sediment brought from the moun-(3) To the north of the river plains are lofty mountains, the highest being the Himalayas. In these mountains are scores of peaks that reach an altitude of over four miles. Even the mountain passes are from seventeen to nineteen thousand feet above sea level, or much higher than Mont Blanc in the Alps.

The coast of India is remarkably regular, and there are, therefore, few good harbors.

It must be remembered that, while India

lies partly in the trade wind belt, the monsons here largely take the place of those winds (p. 218). In summer the monsoons blow from the southwest, toward the heated lands; in the winter, from the opposite direction.

The western coast of the peninsula, therefore, has a heavy rainfall in summer (Fig. 309). There is also an abundance of rain in the south and at the base of the Himallayas. Here, just west Burma, is the region which has the heaviest rainfall the world. Much of the peninsula, however, especially the western side, suffers for want of rain in winter. It

becomes so dry here that plants wither, and in northwestern India and Baluchistan there is an extensive area of true desert.

re are 315,000,000 inhabitants in this, which has an area of about 1,789,000 square miles, or somewhat more than half that of the United States. It will be seen, ore, that there is an average of 178 s for every square mile. In parts of puntry there are 500 persons per mile. How dense this population is better understood, if we recall that are only nine persons per square n the United States. There are, in nore people in India than in North ca, South America, and Africa to-

was once inhabited by a swarthy which was gradually replaced by Aryans, or people of the white race from the north. Now the greater part of the populationg to the latter race.

ough the country has been protected by the by the mountains of the north, a break in intain barrier in the northwest has permitted from that direction. One of these invasions the Mongols, who introduced Mohammedanto northern India. The capital of their was Delhi, and it is said that the present built upon the ruins of ten older cities.

n of about three quarters of the people, while a little over one fifth are Mohammedans. There are only about nine Buddhists and three million Chris-As already stated (p. 233), Brahn teaches the belief in caste, which te different from our belief that all re born free and equal. The caste has been a serious obstacle to the pment of the people. How?

people of India have many religious super. For example, the Ganges, doubtless befits great value for irrigating and fertilizing, is considered a sacred river, and bathing in its is supposed to wash away disease. Since ers are also used for drinking, this custom is it responsible for the spread of much disease. Fout Hindu makes at least one pilgrimage to

the holy river as a means of gaining divine favor and forgiveness.

Over three hundred years ago a company of London merchants gained a foothold in India for trading purposes.

At that time the peninsula was divided among many native English obtulers, and the British government tained control ment was often called upon to settle dis-



Fig. 474. — An Indian woman of low caste.

putes among them. Partly in this way, and partly in protecting British subjects engaged in the Indian trade, Great Britain gradually increased its control of the peninsula. India received its present form of government in 1858, and in 1876 the Indian Empire was formally made a part of the British Empire, the queen of the United

Kingdom taking the additional title of Empress of India.

The entire population of India is over seven times that of the British Isles; and in India itself there is but one British resident to every three thoutands and native inhabitants. One might expect that so few foreigners would

Fig. 475. — Natives preparing rattan in the tropical part of southern India.

find great difficulty in controlling so many people. But that has not usually been the case.

One reason for this is that the British nation is united and strong, while the Indian people, in spite of their numbers, are separated and weak. The caste system is partly responsible for this, for it tends to keep the people apart instead of drawing them together for a common purpose.

Aside from this, the British have done much to improve the country, and they have shown great wisdom in their government of the people. For instance, they have not attempted to overturn the numerous native states, nor to interfere seriously with the established customs. A number

of the native states retain their rulers, and are treated as dependencies. The British have also appointed Hindu officers to as many government positions as possible, and now by far the greater number of such offices are held by natives. As in the case of Canada, a governor general, called the Viceroy, is sent from Great Britain as

chief executive officer.

There are valuable forests on the mountain slopes, who ere the trees, includ- The forests and ing pines, firs, their products and junipers, resemble the ose of Europe; and there zere also magnolias and the bea tiful deodar, a species of ceclar. In the hotter portions are plants valuable for medicines, also spices, such as pep per The teak, and cinnamon. with strong, durable wood - of use in building ships and for other purposes, and the man 20, whose fruit is important a = 8 food, are both common. sides these, the bamboo mid various palms are of grant value. The bamboo is u ed in hundreds of ways making implements as

building houses; and the palms supply juices for drink, fiber for ropes and manage and cocoanuts (Fig. 461) for food a oil.

In parts of the Ganges valley, and elsewhere, the are jungles, or tracts of waste land densely covere with bamboos, canes, etc. From these wastes the lion has almost disappeared; but the elsephant still found, and there are various species of the monkey, also the rhinoceros, buffalo, leopard, wild boar wolf, and Bengal tiger (Fig. 476). The tiger wolf, and Bengal tiger (Fig. 476) are upon cattle, but even attacks men. Among the Himalayas, goats, sheep, asses, and dogs still exist in a wild state. Crocodiles live in the rivers, and poisonous serpents are abundant. It is said that as many as twenty thousand persons are killed each year by the bites of snakes, especially the venomous cobra di capello (Fig. 460).

the very earliest times ple of India have been re engaged in farming, and at present fully three f them follow that oc-

t, which grows on the nds, and rice, which is on the river lowlands he land can be flooded, staple foods of the After the vast numinhabitants are fed, r, there is little left,

some is exported. Wheat is also or export, and India is an important for Great Britain. Much cotton produced. Some of this is manulinto coarse fabrics for use at home, export to China and Africa. But amount is exported, as raw cotton, in the cotton mills of Great Britain. gricultural products are sugar cane,



Fig. 476. — The tiger, one of the wild animals of southern Asia.

tobacco, opium obtained from a species of poppy, indigo of value as a dye, and jute grown upon the sandy river bars for the sake of its coarse, strong fiber.

Much tea is raised on the hills of the very rainy region at the base of the Himalayas, south of Bhutan (Figs. 477 and 478). Tea requires a hot climate, an abundance of rain, and slope enough to prevent the water from

> standing around the roots of the plant. The tea plant, which is from two to four feet high, has bright green leaves resembling those of a rosebush. The leaves are picked several times a year, in many cases by boys and girls. After being picked, the leaves are dried in the sun, and later under cover, in order to remove all moisture before packing.

Irrigation is necessary for the production of rice, and in the drier sections for 2. Develop-other crops as ment of iniwell. Therefore gation this country, favored with large rivers fed by the rains, snows, and melting glaciers of the mountains, has some of the most extensive irrigation works in the world. Where the streams are small, as on the plateau.



Fig. 477. — An Indian woman picking tea leaves.



Fig. 478. - Natives picking tea in a tea plantation in India.

there are large reservoirs for storing the flood waters, such as our government is now building in the West.

Although these people are so extensively engaged

3. Danger of famines and plagues

in agriculture, now and then, when rain fails, they do not raise enough food for their own use. Then terrible famines result. Sometimes one section suffers, while another has an abundance of food.

With the building of railways the danger of famines becomes less, for railroads bring different sections more closely together. The first line was begun in 1854, and there is now a network of railways across the peninsula (Fig. 455). Even the railways do not entirely remove the danger; and probably famines will not cease, so long as such vast numbers depend solely upon the products of the soil.

India has also been visited by plagues which have destroyed tens of thousands of lives. With a population so dense, in a climate so hot, disease spreads rapidly and with terrible effect. This is especially true among people who are not properly nourished.

In addition to the raw products of farms and forests, there are valuable Mining and minerals, including salt, petroleum, coal, and iron.

India has long been noted for hand-made goods of great beauty; but with the exception of these there is little manufacturing. Of late, however, the manufacture of cotton goods by machinery has been increasing. It is natural that this kind of manufacturing should develop here, as in our Southern States. Why?

So many Hindus are engaged in farming that only about five per Large cities of them cent 1. Their numdwell large in Nevertheless, there towns. are eighty-three cities with a population of over fifty thousand, while one, Calcutta, has over a million inhabitants. and two others, Bombay and Madras, over half a million each.

CALCUTTA is a seaport on the Ganges delta. It is the natural outlet of the Ganges and Indus rivers valley, but has a

poor harbor on a river that varies greatly in volume. Since the city is situated near coal fields, there is some manufacturing, but Calcutta is chiefly important as a



Fig. 479. — Temples on the banks of the Ganges at Benares.

commercial center and as the residence of the Viceroy.

coal fields, there is some manufacturing, but Calcutta is chiefly important as a cities, LUCKNOW and BENARES. The latter,



Fig. 480. — Elephants moving logs in a lumber yard in Burma.

the "holy city of the Hindus," is on that part of the Ganges which is deemed most holy. At this point temples (Fig. 479) line the banks of the river for miles, and a steady stream of pilgrims pours in and out of the city.

While there are several cities on the Ganges, there are no large ones on the Indus. This is not because the Indus is useless for irrigation, but largely because its shallow waters and sand bars interfere with navigation. This condition of the river is due to the fact that much of the water is lost by evaporation in crossing the arid plains.



Fig. 481. — Native buffalo used for drawing wagons in India.

BOMBAY, next in size to Calcutta, and the nearest port to England, is a great business center. It is, more-3. Bombay and Madras over, the only Indian city with a really good natural harbor. MADRAS, the third largest city, is situated at a point where there is only an open coast protected by a breakwater. Delhi is the capital.

In Burma there are many Mongolians. Can you suggest a reason for this fact? Vast quantities of rice are raised; and there are other Burma valuable products, such as rubies, sapphires, and tropical woods. In Burma the elephant is used for moving logs (Fig. 480), drawing plows, and carrying passengers. Native humped cattle are also much used as work animals (Fig. 481).

RANGOON, the seaport, is important for its export of rice, but Mandalay, farther up the Irawadi River, is the largest city.

Ceylon, with its fertile soil, abundant rainfall, and high though equable temperature, is a beautiful tropical garden. It was considered by the Arabs to be the Garden of Eden. Among the products are cocoanuts, rice, fruit, coffee, and tea. The island is the third most important tea-producing section in the world. Otherproducts are sapphires and rubies from the stream gravels, and beautiful pearls and mother of pearl from shellfish which live among the coral reefs.

6. Indo-China and the Malay Peninsula

This peninsula is crossed from north to south by a series of mountain chains, spreact. fan-shaped southward. Surface and

Between these principal div ranges are long, sions narrow valleys, which broad toward the south and end =n fertile, populous delta plai at the river mouths.

In addition to Burma, whi is a part of the Indian Empire, there are three divisions **−**of this peninsula: (1) Sia = n, (2) French Indo-China, arad (3) the British Colonies Straits Settlements and Mal-19

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States. of Most of the inhabitants this tropical country, who are either Chinese or Malays, live along the rivers Siam and irrigation canals. They 1. Its produc of are chiefly engaged in the cultivation -er rice, but millet, which is raised in the dri A.R places, competes with rice in importance a Among the mineral produc a food. are rubies, sapphires, gold, and tin. Th forests yield tropical woods, especiall teak wood, both for use at home and for export.

Siam is a monarchy, the king being assiste by a council of ministers and by a legislativ body of noblemen. The poorer 2. Its govern classes are still kept in a kind ment and chief of serfdom by the local govern-city ors; that is, they may be forced to work for the governors two or three months eac year.

BANGKOK, the capital and largest city, situated on the banks of a muddy river, p which vessels of small draught are able o reach the city. Most of the inhabitants we either in poor houses on narrow, ill-kept treets, or else in boats and floating houses the river. But the king has magnificent palaces decorated with carved marble and rescoed with gold.

Buddhism is the religion of the country, and in Bangkok alone there are said to be ten housand Buddhist priests whose temples are gorgeously decorated with gold, silver, and jewels. Next to the king, the white elephant is held in highest reverence, and Siam is often called "the Land of the White Elephant."

rench Indo-China resembles Siam both n climate and character of people. Its forrench Indoest-covered hills yield valuable teak and iron wood, and n its valleys are extensive fields of rice and millet. Silk, cotton, tea, and spices re other products, and there are also exensive coal beds. Some coal is exported.

The Straits Settlements and Malay States re the two names given to the British possions on the southern end of the Malay traits Settlements and country, so near the equator, alay States such tropical products as rice, such

7. Republic of China

This republic, which is considerably larger than the United States, has more inhabitants than any other nation in the population world. It includes over half the population of Asia, and has fully forty million more people than live in all of densely settled Europe.

In spite of this vast population, there are some sections where there are few people. This is true, for instance, of Distribution of Tibet, Turkestan, and Mongo-population lia, which together make up half of the republic. On the other hand, vast hordes of Chinese live on the river flood plains and deltas of the south and east, making this the most densely settled large area on the globe.

The northern and western half of the republic is a region of plateaus, in some places as high as most mountains, and crossed by many mountain ranges (Fig. 457).

Reasons for such distribution

Not only are the elevated portions cold, but a large part of the region is also arid. For, while much rain falls on the edge of this vast highland, little reaches the interior. The climate, therefore, is unfavorable to all industries save herding, and there are large areas, as in the Desert of Gobi, where even that is impossible.

In the east and south there is much low, level, and very fertile land. The extensive flood plains of the two great 2. Why so rivers, the Hoang-ho and the many in the Yangtse-kiang, are especially east and south rich. Most of this part of China, also, has a temperate climate, with an abundance of rain during the summer monsoon. In the north, for example near Peking, which is in about the same latitude as Philadelphia, the summers are warm and the winters cold; but farther south, as at Canton, just south of the Tropic of Cancer, the climate is tropical. Here rain is abundant throughout the year.

While the flood plains and deltas make excellent farm land, they are in constant danger of being flooded, and are therefore not very safe places in which to live. The Hoang-ho, for instance, may rise as much as forty feet in summer, and sometimes it becomes impossible to control it. In the last twenty-five hundred years its lower course has changed eleven different times, and in some cases this has caused a change of three hundred miles in the position of the river mouth. A single flood de-

stroyed a million lives. Because of the repeated destruction of life and property due to such floods, the Hoang-ho has been called "China's Sorrow."

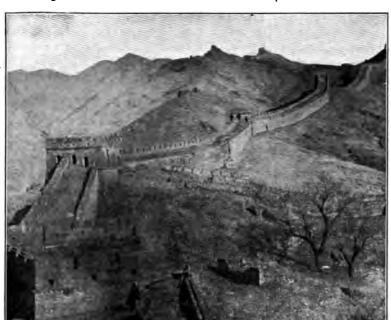


Fig. 482. - A view of a part of the great Chinese wall.

Another danger on the low delta plains is from great sea waves, driven before the winds of fierce storms, called typhoons, which sometimes visit the

China sea in late summer and early autumn. These storms are like the hurricanes which start in the West Indies, and, sweeping along our southern coast, often cause great destruction. The typhoons of Asia, most of which start in the East Indies, also cause great destruction of life and property.

Centuries before Europeans had risen above a state of bar-Character of barism, the Chinese had developed the people 1. Their early a remarkable civilization. The art of printing, the manufacture of gunpowder, the production of raw silk and silk goods, the baking of porcelain, or china ware, and other important arts were known to them long before Europeans learned them.

The peculiar energy of the Chinese is shown by the great wall that they built (Fig. 482). Having the ocean as a barrier on the south and east, the wall that they

country has been most open to attack from the north and west, in spite of the barriers of mountains and deserts on that side. It was probably from this direction that China was entered by the Mongolians, who now make up the main part of the population. The constant danger of invasion by nomads led, as early as 212 B.C., to the building of the Great Wall along the northern frontier (Fig. 455).

This wall, twelve hundred miles long in a straight line, and fifteen hundred miles with all of its windings, leads up and down hill (Fig. 482), and even over a mountain peak. It is twenty-five feet wide and thirty feet high and every few hundred fee there are strong watchtower

rising still higher. This wonderful structure, which required armies of men to build, is now over two thousand years old; yet many parts of it are still perfect.



Fig. 483. - One of the Chinese rivers on which commerce is carried by the use of sail and row boats.

Notwithstanding their ancient civilization, the Chinese have been 3. Their oldoutstripped by Europeans fashioned cus-(p. 347). This is largely toms

due to the fact that the Chinese have a decided dislike for new things and new customs, as is shown in their objection to the use of labor-saving machinery, and to new methods of transportation, such as the railway. Much of the commerce of the country is carried on by means of canals (Fig. 488), of which the largest is the Grand Canal (Fig. 455), built more than twelve hundred years ago. The rivers are also used (Fig. 483), even where it

that a man's time in China is not valued highly.

The Chinese are followers of Confucius, and his doctrine is everywhere taught. In fact, it has not been possible 4. Reasons for for a man to hold office under such backward-the government until he had passed an examination in the teachings of Confucius.

One of the doctrines of Confucius is ancestor worship (Fig. 484), which leads them



Fig. 484. — A Chinese family engaged in ancestor worship.

teams almost impossible for a boat to go; but poles, oars, and sails take the place of steam.

Good roads are rare, and one of the principal vehicles is the wheelbarrow, which is used even for carrying travelers. There are, for example, two thousand passenger wheelbarrows in Shanghai. Pack animals and men are employed for carrying loads, and the wealthy classes are carried in chairs by their servants. From this it is plain

to regard new customs as bad. This tends to check progress, and is one of the reasons why the Chinese have refused (1) The teachto adopt European and Amering of Confucan civilization. This worship cius of ancestors is so strongly established that disobedience to parents is regarded in China as one of the worst of sins, for which children may be whipped to death. By law, the punishment for striking a parent is death.

Strangers, therefore, who represent new

customs, have never been welcome. Some parts of the Republic of China have been especially difficult for foreigners to enter. Until very recently, for instance, the holy city of Lassa in Tibet, a dependency of China, is said to have been visited by only three Europeans. The inhabitants wished to save their city and its sacred temples from intrusion, and they captured and even

nations of Europe to send troops to protect their citizens.

Since then the Chinese have begun to change greatly. Now they are inviting foreigners to China, and are sending many of their young men to Europe and the United States to study. Railroads are being built, mines opened, and factories started. It seems as if, at last, China had awakened from her long sleep.

to save their city and its sacred temples | Until 1912 the Chinese government was from intrusion, and they captured and even | an absolute monarchy, with a governor, or

viceroy, for each Government province, one of whose duties it was to collect money for the government, but who, in some ways, was The Emperor independent. was not a Chinaman, but belonged to the Manchu division of the yellow race, which invaded and conquered China in. 1644. It was then that the Manchu custom of wearing long queue, or "pig-tail," was introduced into China. Thi∈ form of government finally became so unpopular that the Chinese rose in rebellion, and established a republican form of government. It is though now that with this popular

government great progress will take place in China.

Many Chinese are engaged in fishing, both in the rivers and on the ocean. But theyare, in the main, a farming Fishing and The methods em-agriculture ployed are very crude, but the Chinese are so careful and industrious, and labor is of some little value, that they till every bit of land. For example, instead of leading possible. water for irrigation only to land of moderate slope, as in the United States, they often take it to the very hilltops. It is first raised from the river by means of wheels. turned either by men or by buffaloes, and then pumped upward from one terrace to the next, until the whole hillside has been

The principal food of the Chinese is rice:



Fig. 485. — Scene in a Chinese court at Shanghai. The prisoners are on their knees before the judge.

tortured those whose curiosity led them there.

Another reason for such backwardness has been the fear that the introduction of (2) The fear of steam and machinery might want of work throw the people out of work. The strength of this fear was shown some years ago when the Chinese government finally gave permission for a railway to be built. The people objected so strongly that the railway was destroyed.

China has suffered very unfair treatment from some of the European nations, which have seized and held Chinese territory. Partly for this reason, the hatred of "foreign devils" finally became so great that in 1900 large numbers of the people, called Boxers, arose and tried to kill or expel all foreigners then in the country. It was necessary for the United States and the

but their main products for export are tea and silk. is raised on the damp hill slopes of the south. where the conditions resemble those in India (p. 357). Fully forty thousand men and women are employed in carrying tea into FUCHAU alone. They receive but ten cents a day for their labor.

In the warm southern portion of the Country, as in France, great quantities of Taw silk are obtained from the cocoon of the silkworm cater-



Fig. 486.—Chinese farm land. These steep hill slopes are carefully terraced and every bit of soil that can be used is cultivated.

poillar. Some of the caterpillars feed on forest leaves; others on the mulberry leaf.



Fig. 487.— A Chinese pagoda or temple, where the people worship.

It is said that China contains the largest coal fields in the world, in which both bituminous coal and anthracite are mining and found; and there are also de-manufacturing posits of gold, silver, lead, and iron ore. At present, however, little use is made of these mineral resources.

As in other countries of southern Asia, the bamboo is one of the most valuable products. The seeds are ground up for food, and in spring the tender roots and stalks are eaten. The roofs and walls of houses (Fig. 488), as well as nearly all articles of furniture, are made of bamboo wood. It is, moreover, woven into mats, baskets, and hats, while paper is made from its pulp.

The Chinese are an artistic people, and they make some very beautiful china ware and silk fabrics; but they still do most of the work by hand, as has been the custom for thousands of years.

There are so many people in China, they are so industrious and intelligent, and there are such vast resources, that when China once adopts modern methods of manufac-



Fig. 488. — A Chinese village, with bamboo houses, on the banks of a canal.

turing and commerce, she will surely take a leading place among the nations of the world. It may even happen that China will then be able to make and sell goods more cheaply than can be done in Europe or America.

There are many densely crowded cities

in China. The poorer people Leading cities live huddled together, while the 1. Canton and wealthier classes Hongkong and officials dwell in comfort and luxury. One of the largest cities is CANTON, situated on a densely populated delta, and a port of outlet for southern China. Many scores of thousands of people live in boats moored in the river. Canton is especially noted for its silk.

Hongkong, an island which commands the approach to Canton, belongs to the British. Many of the products of China are sent from this port to Europe and America.

HANKAU and WUCHANG, on the Yangtse-kiang River,

are important river ports for tea. Here, as in the case of most Chinese cities, the 2. Chies on number of inhabit- the Yangtseants is uncertain. Hang River For example, by some estimates Hankau has a population of over a million, by others, only half a million. Shanghai is another large city. It is a treaty port; that is, one where foreigners are allowed by treaty to carry on trade; for this is not permitted in all Chinese cities.

PEKING, the capital of China, is situated on a broad, sandy plain. It has been 3. Peking and the capital of a Tientsin kingdom for three thousand

years, and the capital of the Chinese Empire for over eight centuries. This is city, like others in China, is surrounded by a high wall with gates that are closed at night, as was the case in European cities in olden times (Fig. 489). One of portion of the city, formerly reserved for the city of the city of the city of the city of the city.



Fig. 489. — A caravan of camels, outside the walls of Peking.

the gardens and palaces of the emperor, is known as the "Forbidden City," because before the Boxer uprising the Chinese government refused to permit foreigners to enter it.

TIENTSIN, the port nearest PEKING, and the northern terminus of the Grand Canal,

is another important seaport. It was from this point that the European and American forces started, in 1900, to relieve the foreigners who were besieged in Peking by the Chinese Boxers.

8. The Japanese Empire and Korea

The two principal islands of apan are Nipon and Yezo; but the empire extends arts of the as far south as Impire and Formosa, Importance of which heir location was captured from he Chinese in the war of 1894. In the north it includes the ✓urile Islands, as well as the outhern half of Sakhalin, which was ceded to Japan by Russia at the close of the war **f 1904**-1905.

The position of this empire, short distance from the mainand, has secured to the Japanese come of the same advantages that the British have enjoyed.

That is, it has protected them from many invasions, while it has also given them a very favorable position for commerce. No part of the empire is far from the sea, so that shipment by water is easy. Estimate the greatest length of the empire from north to south. Is the fact that the islands are so scattered an advantage or a disadvantage, as compared with the British Isles?

The combined area of the islands is almost

a hundred and fifty thousand

square miles. How does that

compare with the area of the British Isles? Of New England? Of California?

The population is more than fifty-one million. Thus the empire contains only a few million more than the British Isles. How does this compare with the population in New England? In California?



Fig. 490. — A Japanese coolie carrying water.

So much of the surface is mountainous, that not more than one sixth of it can be cultivated. Moreover, the Surface and rugged surface, and the ab-climate sence of navigable rivers, make it difficult to reach some of the towns and villages of the interior.

There are numerous volcanoes in the Japanese Islands (Fig. 458); and, since the mountains are still growing (p. 342), there are many earthquakes. These are so frequent and violent that the Japanese build

their houses of light materials, and to no great height, so that they resist the shaking, and cause less destruction of life if they fall.

In what latitude does Formosa lie? How far is it from the Philippines? What is the latitude of the northern portion of the empire? From these facts it is plain that Japan has a more varied climate than the British Isles. What must be the effect on

Fig. 491. — A Japanese laborer drawing a two-wheeled vehicle called a jinrikisha.

the kinds of crops, compared with the kinds in Great Britain?

Nipon, the main island, has a warm temperate climate and abundance of rain. Other islands, near by, have a similar climate. What must be the climate of Formosa? Of the islands in the northern part of the empire?

In early times, Japan was invaded by Origin of the people and land, who drove the original inhabitants, the Ainus, to the more barren northern islands.

The Japanese are descendants of these in-

vaders. They are small in stature, but are very strong.

The Japanese are a very artistic people. Centuries before the time of Christ, they had developed a civilization resembling that of their kinsmen, the Chinese. Their fine taste led them to manufacture many beautiful articles of silk, metal, glass, and wood.

Like the Chinese, the Japanese for a long

time did not care for modern civilization, and closed their ports to the outside world. In 1853, however, United States war ships, under the command of Commodore Perry, entered Yokohama and induced the Japanese to open their ports to our commerce. After this important step the country was finally opened to the world in 1868.

One great drawback to the advance of Japan was the natural of the government, The governwhich resembled ment the old feudal system of Europain the Middle Ages. While the Mikado was emperor in name the real power was in the hands of noblemen who had large numbers of peasants, not only to work, but to fight for them when necessary.

After the country was opened to foreigners, the power of the noblement was lessened, and the Mikado became the real emperor. At present he is aided by two legislative bodies, one made up chiefly of noblemen, the other elected by the voters. There is also a Cabinet appointed by the Mikado, as the Cabinet of the United States is appointed by our President.

Since these changes, the Japanese have become noted for their ability to learn the lessons of Western civiliza- Recent adtion; and their progress has vances been truly marvelous. New schools have been opened, and education has been made

have been invited to Japan to teach, and | and, wherever the soil is suited to it, there

and America to study in the universities and to learn what they could of Western civilization. Thus, in a single generation, the Japanese added to their own knowledge that of Europe and America. They have learned their lessons so well that, with their patience, skill, and intelligence, they alone, of all the nations in Asia, have taken rank with Powers of Great

world. The progress they have made is proved by the following facts: Over two thousand newspapers and magazines are now published in Japan. While in 1872 there was only one short railway, from Yokohama to Tokyo, a distance of eighteen miles, there are now over five thousand miles of railway in the empire. The industries are also highly developed.

compulsory. Americans and Europeans | dars, camphor laurels, and lacquer trees, Japanese students have been sent to Europe is agriculture. Among the products of



Fig. 492. — Japanese girls picking tea leaves.

the farms are wheat, sugar cane, and rice, the latter being the chief Lumbering, article of food, as among other agriculture, As in China, and fishing both tea and raw silk are produced, and these form two of the main articles of



Fig. 493. - Japanese women gathering the cocoons spun by the silkworm.

The mountain sides are covered with | export. Much of our tea comes from forests of great value, including giant ce- | Japan.

Besides these industries, fully two and one half millions of people are engaged in fishing, for fish form one of the important foods of this island people.

Among the mountains there are valuable Mining and deposits of gold, silver, copper, manufacturing sulphur, petroleum, iron, and coal, and there are now many mines.

There are many large manufactories, particularly of cotton and silk goods, pottery and machinery. As in the British Isles, cotton and raw products are imported in

cities, having a population of several hundred thousand, are Kyoto, the former capital, and the center of the tea district, and NAGOYA, a center for porcelain manufacturing, for which Japan has long been noted.

Japan gained control of Korea in 1905, as a result of the war with Russia. This mountainous peninsula has a temperate climate, suited to the production of such crops as grains in the north, and rice, tobacco, and cotton in the south.

In many respects the Koreans resemble the Chinese; in fact, Korea was for a long time a depen-



Fig. 494. — Planting rice in the flooded fields in Japan.

large quantities for manufacture. Here, too, much food must be imported, especially rice, flour, and sugar.

Tokyo, a city much larger than Philadelphia, and about the size of Chicago, is Principal the capital of Japan. Besides cities being the home of the Mikado, and therefore having many government buildings, it is a busy manufacturing center. Yokohama, at the entrance to Tokyo Bay, was a mere fishing village when visited by Perry; but since the harbor of Tokyo is unsuited for large modern ships, Yokohama has grown rapidly. It now has the largest foreign trade in Japan.

The second city in size is OSAKA, a noted cotton-manufacturing center with a population of over a million. Other important

dency of China. While there are great natural resources, including both coal and iron, little use have been made of them. Like the Chinese, the Koreans have refused to allow foreigners to enter, as is indifficated by the name "Hermit Kingdom," long applied to Korea. But since the Japanese have obtained control of the country, there has been much progress. The capital and largest city is skelled.

General Facts. 1. State the size and position of

Asia. 2. Describe its surface features. 3. Its climate. 4. How do the plants and animals of northern Asia resemble those of Europe? 5. How and why do the plants and animals of southern Asia resemble those of Africa? 6. Explain our debt to Asia for domesticated plants and animals. 7. Give examples of domesticated animals in Asia. 8. What can you tell about the number of people and their distribution? 9. To what races do they belong? What is their religion? 10. State reasons for their

early progress. 11. Why have they fallen so far be-

hind? 12. What signs are there of progress in the future?

The Turkish, or Ottoman, Empire. 13. Why is this empire of special interest to us? 14. Describe its surface and climate? 15. How has its position been a disadvantage? 16. Give some facts about its industries, products, and chief cities. 17. Tell about the area, surface, and climate of the Holy Land. 18. What important events happened here? 19. What do you know about the former products and commerce of Palestine? 20. What are the present attractions here, and what are the methods of travel? 21. State some facts from the ancient history of Mesopotamia. 22. What importance has it at present?

Arabia, Persia, and Afghanistan. 23. Describe the surface features and climate of Arabia. 24. What about its former importance? 25. How is Mecca of importance? 26. Tell about the population and prodnets of Arabia. 27. Its government. 28. Describe the surface features and climate of Persia. 29. Name its agricultural products. 30. Tell about its mining and manufacturing. 31. Its government and chief dity. 82. State what facts you can about the surface, climate, and people of Afghanistan. government and its recent importance.

Russia in Asia. 34. What are the area and principal divisions of this region? 35. Describe the principal belts of climate, and of plant and animal life. 36. Of what importance has this region been in the post? 87. Why has it not been more important? 88. What recent improvements have been made here and what are the prospects for the future? 39. Name and locate the leading cities.

The Indian Empire and Ceylon. 40. Name and locate the main divisions of this empire. 41. Describe its surface. 42. Its climate. 43. What about the density of its population? 44. To what races do the people belong? 45. Give facts about their religion and superstition. 46. How did the English get control of this region? 47. How have they been able keep control? 48. State the principal facts about the forests and their products. 49. The farm prodcts; the development of irrigation. 50. The clanger of famines and plagues. 51. Mining and manufacturing. 52. The leading cities. 53. Tell hat you can about Burma. 54. Ceylon.

Indo-China and the Malay Peninsula. 55. Describe the surface features and name the principal divisions of this region. 56. State the principal facts about Siam. 57. About French Indo-China. 58. The Straits Settlements and Malay States.

Republic of China. 59. What facts can you give about its area and population? 60. About the distribution of its population? 61. State reasons for such distribution. 62. What early advance was made by the people? 63. Describe the great wall that they built. 64. Give instances of their oldfashioned customs. 65. State reasons for such backwardness. 66. What about their government? 67. Their fishing and agriculture? 68. Mining and manufacturing? 69. Locate and tell about the leading cities.

Japanese Empire and Korea. 70. What are the parts of this empire, and how is the position of the empire important? 71. What about the area and population? 72. Describe the surface features and climate. 73. What is the origin of the people? Give facts from their early history. 74. Describe their government. 75. What about the recent advances of the Japanese? 76. Give the principal facts about lumbering, agriculture, and fishing. 77. Mining and manufacturing. 78. Principal cities. 79. Tell about Korea.

1. How do North America and Asia differ in form? In regularity of coast line? In direction of mountain ranges? In extent of the deserts? 2. Does the Canadian Pacific Railway lie to the north or south of the Siberian railway? Which

north or south of Peking? 4. Name

General review questions and comparisons is the longer? 3. Is San Francisco America with North

the three peninsulas of southern Asia; of southern Which of the six is nearest the latitude of Florida? 5. Name the large rivers of Asia and of Canada that flow into the Arctic Ocean. On a globe estimate the shortest distance between the mouths of the Mackenzie and Lena rivers. 6. How do the great rivers of China compare in length with the Mississippi? With the Volga? 7. How do the interior lakes and seas of Asia compare in value for commerce with our Great Lakes? Why? 8. With what salt lake in North America may the Aral Sea be compared? 9. What ocean currents affect the climate of Asia? Of North America? 10. Compare the climatic belts of Siberia with those of Canada. 11. Is western Asia more or less suited to agriculture and commerce than western North America? Why? 12. In what portions of North America and Asia is rice cultivated? 13. Answer the same question for cotton. 14. What important crops in Asia are not extensively raised in the United States? 15. Name some of the leading imports from Asia to the United States. 16. What about mining in Asia compared with that in the United States? 17. Make the same comparison for manufacturing; for railways. 18. What is the chief kind of government in each of the two continents?

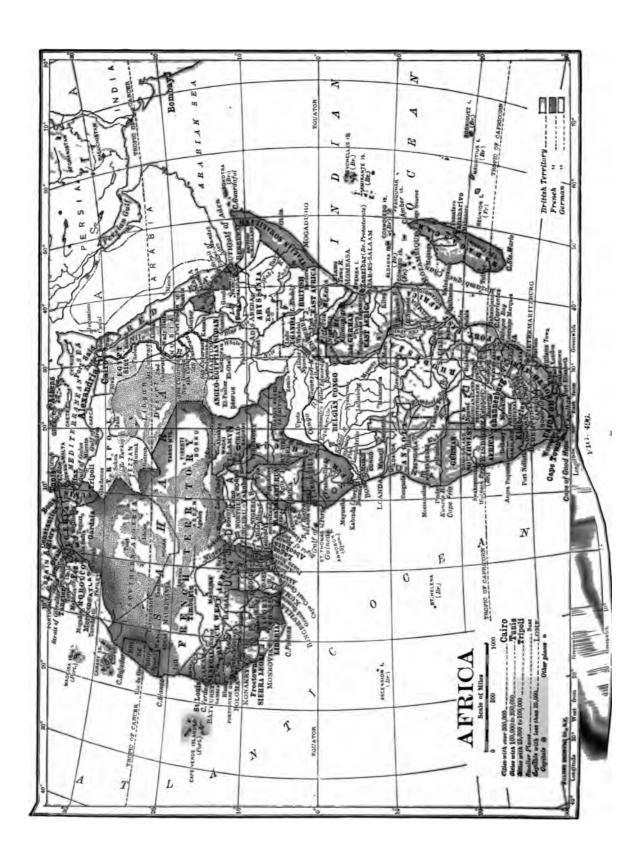
1. What do you know about recent massacres of Armenian Christians by the Turks? 2. Make a sand or clay map of the Holy Land Suggestions (Fig. 465). 3. Point out on the map (Fig. 465) some of the places often mentioned in the New Testament, and describe some of the events that occurred there. 4. What Bible events have their scene in Mesopotamia? 5. Write a paper showing how our present civilization is indebted to the Holy Land. 6. Find out some facts about the Crusades. 7. About how far is it by rail from Lisbon in Portugal to Port Arthur on the Pacific? 8. Read Kipling's "Jungle Books." 9. Why should the Great Wall of China have less value now than formerly? 10. Find out about our laws for the exclusion of the Chinese, and the reasons why they were passed. 11. Find out about some of the events connected with the Boxer trouble in China in 1900. 12. What Asiatic countries have you seen represented among the immigrants to the United States? 13. Examine

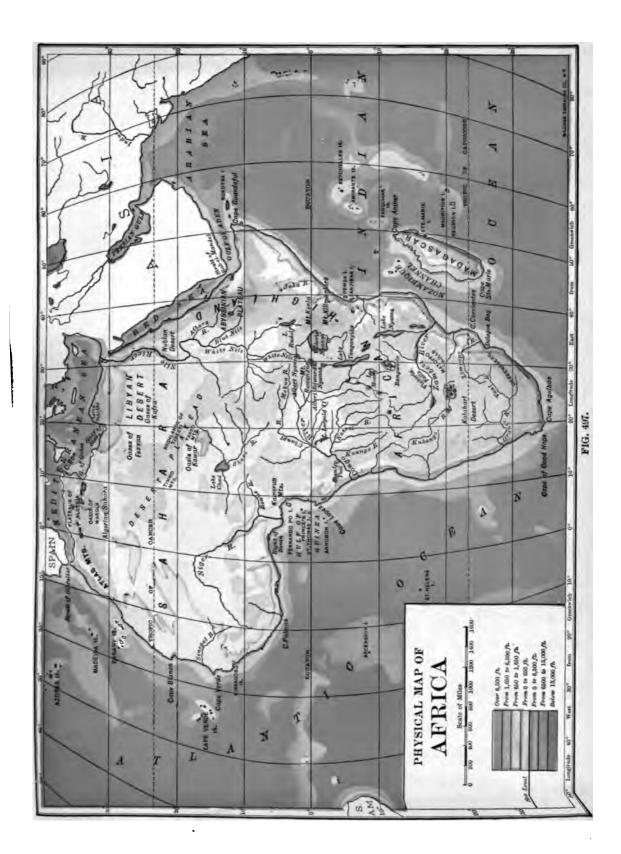
pictures of buildings in Asia (in this book or elsewhere), to note how they differ from our own. 14. Write a paper telling in what respects you would expect to find an Asiatic city different from one of your own. 15. By what water routes could you go from New York to Tientsin? Would it be nearer to go by rail as far as San Francisco or Seattle? 16. By what three all-water routes could you go from New York to Bombay? Which is the shortest? 17. Who first reached India by water? 18. Who was Marco Polo?



Fig. 495. - Relief map of Africa.

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II. AFRICA

compare Africa with the other continents in Fig. 1). 2. Sketch the outline of Africa, and locate the principal rivers and lakes. 3. What peculiar fact do tice about the location of the mountains? at zones cross Africa? 5. What kind of would you expect to find (a) in the extreme (b) in the extreme south; (c) at the equator; ar the tropics? 6. Find the desert country and south of the equator (Fig. 497). 7. In ections are most railways found? What rean you suggest for their location? 8. Where large cities? Compare their number with nother continents.

1. General Facts

ica, the second continent in size, rees South America in outline. Its

form is roughly
that of a triof angle, broad at
aent the north and
ag toward the south.
ast line is very regular,
a respect being quite
at from the coast of
a, Asia, and North
a, but resembling that
atth America and Aus-

What effect must such lar coast have on the r of harbors? What seas, and large islands and on the map of?

ca differs from all other ents in its mountain systems. The continent is

mainly a plateau; but near the he plateau edges are broken, and the uplifted, so that there is an almost the mountain rim (Fig. 498). Trace buntain rim (Fig. 495); from what the coast is it absent? In northern some of the peaks of the Atlas rise to a height of fourteen thou-

sand feet; but the loftiest mountains are in the east central part. Among the latter is the volcanic cone of Kilimanjaro. Find this peak and trace the mountains from there northward. Notice the elevated land in Abyssinia.

Owing to the mountain rim, the rivers of Africa are peculiar. For instance, the Niger, after rising among the 3. The drain-highlands near the west coast, age sweeps around in a great curve before entering the Atlantic. The Zambezi, in the south, also rises near the west coast, but flows eastward across the continent to the Indian Ocean. Trace the courses of the Nile and the Congo, the two largest rivers.

In descending from the interior plateau each of these streams is interrupted by rapids and falls. Find the Victoria Falls



Fig. 498. — The mountainous rim of the African plateau at Cape Town.

of the Zambezi (Fig. 497); the cataracts of the Nile; also Leopoldville on the Congo, below which are some falls. How must these great rivers compare, therefore, with the Mississippi or Amazon as routes for commerce? How must these falls affect the development of Africa?

In one part of Africa there are several

large lakes. Name the three largest. Into what rivers do they empty? How do they compare in size with our Great Lakes (Appendix, p. 431)? Why are they not as useful for navigation and commerce?

The equator crosses so near the middle of Africa that only the northern and south
Climate ern extremities are in the tem
1. Its general perate zones. Therefore the climate of most of the continent, like that of South America, is tropical.

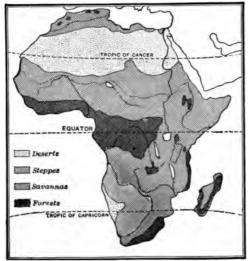


Fig. 499. — To show the influence of climate on vegetation. In the savanna area there are numerous forest-covered sections, especially near the rivers.

Since the African plateau rises to nearly the same elevation in all parts, the belts of climate extend nearly east and west. Is this true of South America?

For some distance both to the north and south of the equator, there is such a hot, s. The forest rainy climate that, as in the belt Amazon Valley, the land is covered with a dense tropical forest. This is especially true near the coast at the base of the plateau, where the narrow strip of coastal plain is hot, reeking with moisture, and is therefore the seat of deadly malaria.

The interior, owing to its greater eleva-

tion, is cooler and more healthful; but even there tropical heat and rain prevail near the equator. It is this heavy rainfall that supplies the Congo and Nile with their immense volumes of water.

Both north and south of the rainy region is the savanna belt (Fig. 499), where the rainfall varies with the season.

Why (p. 214)? Where are nas north and the corresponding savannas in south of this South America (p. 238)?

Why are the savanna belts covered with grass instead of forests (p. 228)?

The small number of streams on the map (Fig. 497) shows how dry the climate must be in the savanna belts. So, also, does the condition of Lake Chad; for, although a good-sized stream enters this lake, no water flows out. The size of this lake is not always the same, for during the dry season the lake shrinks until it is smaller than Lake Erie, but with the coming of the wet season it rises until it becomes several times as large.

As the tropical forest grades into the savanna, so the savanna merges into the true desert (p. 377), where the in-4. The two fluence of the drying trade desert regions winds is felt at all times of (1) Their local the year. In only a few parts tion of northern and southern Africa is there fair amount of rain; that is on the mountain slopes near the Mediterranean (Fig. 298) and on the southeastern slopes South Africa, where the winds blow from the sea.

The northern desert is much larger that that south of the equator. This is dupartly to the fact that the continent is so broad in the northern desernorth, and partly to the large is much the land areas which lie to the north and east. Since the north and east are the directions from which the winds of northern Africa must come, they reach this region with little vapor. Thus the Sahara forms a part of the most extensive desert belt in the world.

In the Sahara there are cloudless skies, and there is very little rain; but here and there, on the moun-

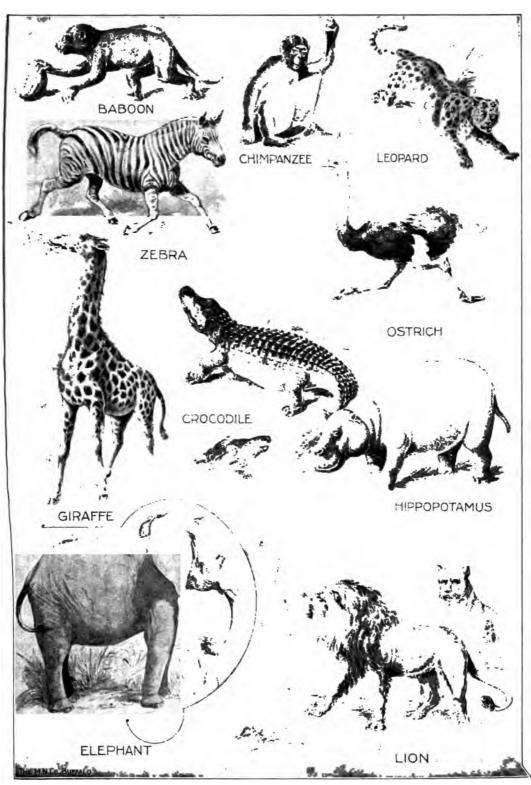


Fig. 500. -- Some of the wild animals of Africa.

tain slopes, there is moderate rainfall. It is this which supplies the widely scattered springs, and the short mountain streams that nourish

(8) The kind of climate in the Sahara

the vegetation of the oases. In the dry, clear desert air, the nights are cool, even in summer. Although the midday temperature may rise as high as 100°. or even 115°, in the shade, blankets are needed for

Among these, on the savannas, and

cover at night. The open country between the desert and the tropical forest abounds in large animals (Fig. 500).

The native plant and animal life

on the edge of the forest, are the antelope, giraffe, buffalo, zebra, elephant, lion, leopard, and rhinoceros, 1. In the while the crocodile and the huge hipsavannas and popotamus live in the rivers. The the forest belt dense forest itself is shunned by many

of the larger animals, though teeming with insect life, birds, reptiles,

Fig. 501 — An African negro woman planting.

mammals. Among the latter are the baboon, the gorilla, chimand the panzee (Fig. 500). Portions of the desert, especially where 2. In the covered desert with regions dunes of moving sand, have almost no plant life. Animals are also few in number, among them being the ostrich (Fig. 500) and the camel. The oases, on the other hand, sup-

and tree-dwelling

port a number of plants. Of these the date palm is most notable, for it is an important source of food for the nomads of the desert.

Central and southern Africa is the home of the negroes, who are divided into many tribes with different customs. Native inhab-For centuries the negroes were itants of Africa captured by the whites and 1. Negroes sold into slavery; but the day

of the slave trade is now almost past. In spite of the frequent slave-hunting raids, and the great destruction of life in the fierce tribal wars, there are many negroes left. Some are fierce and warlike; others peaceful. Those who dwell in the forest live by hunting; those upon the savannas, by simple forms of agriculture (Fig. 501) and by herding. With a fertile soil, and in a warm climate, they are able to support themselves with little work, especially along the rivers and on the savannas.

The forest and much of the savanna have been occupied by the negro, even down to the present day; but the arid sections of northern Africa have been held by the white race since very early times. They are in part herders, living the nomadic life common to such lands. These people are intelligent and full of energy, though fierce and warlike. On the cases are a more peaceful class, living the life of farmers. Near the border line between the blacks and whites there

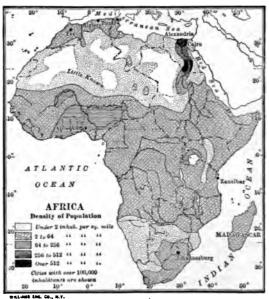


Fig. 502.

has been such a mixture of blood that the population consists largely of half-breeds.

Although Africa is so near Exploration Europe, it has been less ex- and settlement plored and settled by Euro- 1. Why so little peans than any other continent. of either

There are several reasons for this, the most important being the fact that so much of Africa has a tropical climate. The desert epels people, and the hot, damp climate of he coastal strip, upon which colonies would aturally be first started, was found to be ery unhealthful (p. 374). Disease is apt o seize white men even while they are rossing the coastal strip. Besides, progress into the interior was checked by hostile cordes of blacks, and by the absence of avigable rivers. Moreover, men who were willing to leave Europe were more attracted toward Australia and America. Why?

Even before the famous voyage of Columus, the Portuguese—the most progressive
sailors of that day—were trying to reach the East Indies
by the Portuend of Africa. After various
oyages, the Cape of Good Hope was finally
assed, and in 1498 the way to the Indies
by water was opened. The Portuguese
colonies there (Fig. 496).

By far the most successful colony in the ewly discovered parts of Africa was that started by the Dutch at Cape Colony, a little later than their ettlement of New York. As was the case New York, the British seized the Dutch erritory; but by migrating northward, the long time. Finally, in 1900, that territory lso was seized by the British, who still hold it.

During the nineteenth century, Livingstone, Stanley, and other explorers entered

By other the "dark continent"; and
record since these expeditions there
has been great progress in exploring Africa.
Many European nations have taken part in
the exploration, and as a result have laid
claim to the territory. Among these the
British have been by far the most active.
What other nations have possessions in
Africa (Fig. 496)?

2. Northern Africa

Much of northern Africa is such a desert that its inhabitants are few and scattered. It is, however, under the conDivisions of trol of several nations. The this region, greater part of the Sahara is and their govclaimed by the French, though ernment the Spanish hold a small section on the western coast, and the British control both the Libyan desert and the Egyptian Sudan in the east.

Along the Mediterranean coast are several well-settled sections, the best known being Egypt. The four countries west of Egypt — Tripoli, Tunis, Algeria, and Morocco—are often called the Barbary States (the home of the Berbers). Tripoli and Egypt are parts of the Turkish Empire, although the latter is partly under the control of the English; Algeria and Tunis belong to France; and Morocco is independent. It is ruled by an absolute monarch, called the Sultan.

From the Atlantic to the Red Sea, and from near the Mediterranean coast to the grass lands of the Sudan, there The Sahara is almost unbroken desert—1. Its extent the famous Sahara. Its area is estimated to be from three to four million square miles, or about equal to that of the entire United States.

It is a plateau of uneven surface, with low mountain ranges here and there, and bordered on the north by the 2. Its surface Atlas Mountains. The wind-features swept highlands are bare and stony, while in the lowlands there are extensive areas of sand dunes. Much of the soil is fertile, and with rainfall would yield abundant crops. But nature has forbidden rain, and its surface is therefore barren in the extreme. Only on the oases, of which there are some four hundred in the Sahara, is there water for irrigation and for drinking (Fig. 503).

Caravans cross this desert in order to carry the products of central Africa to the

northern coast. These include ivory, skins, 8. Caravans and ostrich feathers, obtained (1) Their object by bartering with the negroes.

One of the important routes is from Tafilet in Morocco, southward to Timbuktu, and the trip requires fully three months. Estimate the distance. There may be from a thousand to fifteen hundred camels in a single caravan, and a full year may be needed to equip it. Each camel is carefully selected by the chief

but the better grades are able to go six or seven days without water, and with almost no food.

There are dangers in the journey aside from that of thirst. Sometimes sand storms arise; and although such a storm may not last many hours, it may destroy a whole caravan. The wind then blows fiercely, and sand fills the air, drifting about in such quantities that animals and men alike are smothered in the drifts. Small caravans are in danger of being attacked by wandering tribes; and near the southern edge of the



Fig. 503. — Algerian natives drawing water from a well on the edge of an easis in the Sahara desert

of the caravan, and extra camels are taken to replace those that give out on the journey. Usually about a third of the animals perish in the round trip; and before the return journey is begun, it is necessary for those that have survived to have a rest of several weeks.

There is one driver for every dozen camels. Upon starting, the loads are carefully packed on the camels' backs, each animal bearing about three hundred pounds. A day's march lasts sixteen hours, the camels traveling some thirty abreast, at the rate of about two miles an hour. Ordinary camels cannot travel more than three days without drinking;

desert the danger from attack by the lion is added. It requires courage and great powers of endurance to engage in the caravan trade.

Egypt and the Libyan desert are a continuation of the Sahara, and have all the features of the desert just degraph are scribed. Even at Cairo the neighboring average yearly rainfall is but British terrian inch and a half. The climate tory are of northern Egypt, both 1. Its climate in summer and winter, closely resembles

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that of the desert portion of western Arizona and southeastern California.

The Egyptian Sudan and the country south of it, on the 2. The Nile other hand, River have a tropi-(1) Where its cal climate, waters come from arid in the north, but warm and humid in the south, where the influence of the tropical rains is felt. The head waters of the Nile, near the equator,

are fed by such heavy rains that the river is able to flow across the desert in spite of the fact that no tributaries enter the lower half of its course. How great a distance is that?

After leaving the rainy region of the



Fig. 505.—The lower Nile. The shaded area between the two deserts is farming land, which is reached by water from the river. The numerous crossed lines are railways. Find the Pyramids. Why is the location at the head of a fertile delta, and at the outlet of a narrow river valley bounded by desert, a favorable one for a large city?



Fig. 504. - One of the Pyramids.

south, the Nile crosses the desert through a valley—in places a thousand feet deep—which it has cut in the plateau. In this part of its course there are several cataracts (Fig. 496).

Below Cairo the river leaves its narrow valley, divides into several channels, and flows across a plain (Fig. 505). This plain is the delta which the Nile has built in the Mediterranean Sea during the ages that the river has been bringing sediment from its upper course. It is the Nile that suggested the term delta, now given to similar deposits at the mouths of rivers in various parts of the world. The word comes from the Greek letter delta (Δ), which has the form of a triangle. Notice that shape in Figure 505.

When the rainy season swells the Nile tributaries among the Abyssinian Mountains, the river rises so high (3) Its important it overflows large tracts tance of the broad delta below Cairo. The rise begins in June and reaches its height in October. By this overflow the land is irrigated, and a thin layer of fine mud is spread over the fields. This serves to fertilize the soil so that, year after year, heavy crops may be raised without making the soil sterile.

Without the Nile the whole of northern Egypt would be a sparsely inhabited desert; but the precious river waters transform the section near the Mediterranean into a great oasis. This has become the

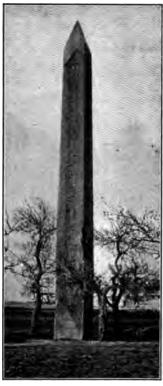


Fig. 506. — An obelisk in Egypt.

seat of an important agricultural industry, and is densely settled.

Because of these very favorable conditions, the Nile delta has been occupied by 3. Agri- an agriculture cultural people from the very earliest It is times. still the seat of a great grain industry, producing wheat, corn, millet. and barley. Much rice and sugar cane are also raised, and much cotton. which is of

especial value because of its long fiber. There are many vineyards, and orange, lemon, and fig groves; and both along the Nile and on the oases of the desert there are

groves of date palms. Grazing is important in the Nile Valley and on the neighboring plateau. The animals raised include the buffalo and camel, in addition to sheep, goats, cattle, horses, and donkeys.

The known history of Egypt reaches back several thousand

4. History years before the time of Christ. The fertile soil times and favorable climate encouraged agriculture then, as now; and the surrounding desert and sea gave protection from frequent in-

vasions. This led to the growth of a prosperous nation, in which there arose a civilization in advance of that of the neighboring sections of Europe and Asia. In fact, at the time when Europe was inhabited by barbarians, Egypt had made long advances in civilization. It was from Egypt that Europeans learned some of their early lessons.

We read in the Bible of the Pharaohs who ruled over Egypt. Can you recall any of the Bible stories which mention these rulers; for example, the story of Joseph? During those times the Egyptians built the obelisks (Fig. 503), the Sphinx (Fig. 507), and the marvelous pyramids (Fig. 504) which are really the tombs of kings. By a peculiar process they preserved the bodies of their dead, and these mumnies may be seen in the museums in many of our large cities. Among the mummies that have been found are the remains of some of the Pharaohs themselves.

Egypt later became one of the highways of the world, when the people who dwelt along the eastern shores of (2) How it later the Mediterranean, and farther suffered east in Asia, began to migrate westward. Against its people many destructive wars were waged, and as other nations have advanced, the Egyptians have steadily lost ground. The famous conqueror, Alexander the Great, overcame the Egyptians and founded the city of Alexandria; later



Fig. 507. - The Sphinx in the Egyptian desert.

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the Romans made conquest of the territory; and since then it has been repeatedly invaded, for it has continued to be highway of trade for three continents.

Among the last conquerors of Egypt were the Mohammedan Turks, and for a long ime Turkey has had some control over the country. At present Egypt is required to pay annual tribute to Turkey; but it otherwise independent of that country.

(3) How it came
artly under
ontrol of the
English, and
The results

The government of Egypt is a monarchy, and the ruler is called the *Khedive*.

hat the French and British nally took control of the nances of the nation. When he French refused to aid in ubduing a rebellion in Egypt, he British alone took a large hare in the control of Egypian affairs.

As a result of British direction, here has recently been much progess in Egypt. Extensive irrigation

works have been undertaken, by which the area uitable for raising cotton and sugar cane has been reatly increased. By means of reservoirs and canals t is further planned to reclaim thousands of square niles of the desert. Several railway lines have also been built (Fig. 496), including a part of a proposed line from Cairo to Cape Town, as far as Khartum. Outside of the Nile Valley, however, travel still depends largely upon the use of camels (Fig. 507).

Northeastern Egypt includes the Isthmus of Suez, which connects Africa with Asia.

5. The Suez

This narrow neck of land has for centuries stood as a barrier to water travel from Europe to southeastern Asia, forcing European vessels to pass all the way around Africa in order to reach southern Asia. It is not to be wondered at, therefore, that a ship canal has been dug across this isthmus.

The Suez Canal, begun in 1859, was finished in 1869. It extends from Suez to Port Said (Fig. 508), and is eighty-seven miles long, with a depth

of twenty-six feet and a width at the surface of from sixty-five to one hundred and twenty yards. Its length is much greater than that of the Panama Canal, but it was easier to dig, for the country is quite level, and about twenty-one miles of the canal is through a lake. Ten vessels, on an average, pass through the Suez Canal each day. Estimate the distance saved by this canal in going from London to Calcutta.

At the head of the delta, just above the point where the Nile branches (Fig. 505),



Fig. 508. — Ships passing through the Suez Canal.

is CAIRO, the capital and largest city of Egypt and, in fact, of all Africa. It has a population of over half a mil- 6. Leading lion. This interesting place Cities is visited each year by a stream of tourists, some attracted by its reputation as a winter health resort, others by the strange life of the country and by the remarkable ruins of the ancient civilization (Figs. 504, 506, and 507).

Cairo itself contains the palace of the Khedive, several interesting mosques, and a museum in which there are many Egyptian relics and works of art. The natives also attract attention, for in the streets may be seen many people, with different languages and peculiar customs (Fig. 509). The differences among the people are indicated by the following fact: There are three Sabbaths each week, Friday, the Sabbath of the Mohammedans; Saturday, ob-

served by the Jews; and Sunday, by the | cork oak. Large numbers of camels, sheep, Christians.

ALEXANDRIA, connected with Cairo by rail, is the seaport of Egypt and the second city in size. Nearly half the trade is with Great Britain.

State the position of each of the four countries west of Egypt. While these countries border the The Barbary Mediterranean, they **States** extend far south-1. Their surface and climate ward into the desert (p. 377). What about the

government of each?

The Atlas Mountains skirt the Mediterranean coast from the Atlantic to Tunis, where they project into the Mediterranean, forming the most northerly point in Africa. These mountains cause vapor to be condensed when winds blow from the ocean or from the Mediterranean. For this reason many of the valleys among the mountains are well watered.

goats, and cattle are raised among the mountains and ucts

upon the plateaus. Agriculture is carried on here and

with water supplied by the mountain snows and rains, as in southern California Among the crops are dates, grains, figs, grapes, and olives. Wine from the grapes of Algeria is shipped in large quantities to France; and much olive oil and the best dates in the world come from Tunis.

there, often by means of irrigation,

The mountains contain many valuable mineral prod-

ucts, including precious metals in Morocco and Algeria, and marble and alabaster in the latter country. Little use is made of these minerals, however.

Fig. 509. -– An Arab woman in the streets of Cairo.

Forests cover some of the mountain slopes, and one of the valuable trees is the | the Berbers, still dwell on the desert and

The original occupants of this region,



Fig. 510. — Nomads encamped in the desert of Algeria, south of Biskra.



Fig. 511. - Algerian natives plowing with a camel on an oasis in the desert.

among the mountains, where they were | or Mohammedan Bible. What does such a condi-

8. Character of the inhabitants
ants

Most of the natives are Mohammedans.

Many of the inhabitants of Morocco are still barbarians, and some of the tribes among the mountains even refuse to recognize the rule of the Sultan. On the whole the people are cruel and treacherous, and if a vessel is wrecked upon their coast, it is sure to be plundered by them. Even within the last few years, Europeans have been seized and held for ransom. It is easy to see, therefore, why it has been necessary for Spain, with the consent of other Powers, to attempt to control these wild people.

Conditions of life in Morocco are illustrated by the following: The writer once visited a school in Tangier consisting of a dozen boys from nine to ten years of age. The room where they studied received its only light from the open door, and it contained no seats, desks, or furniture of any kind. The children sat on the floor, in a semicircle around a long-bearded old man, who also sat on the floor; and the only object that each had before him was a page from the Koran,



Fig. 512. - An Arab school in northern Africa.

tion of education suggest in regard to progress? If this is the case on the coast, almost within the shadow of Europe, what must be the condition farther inland?

The capitals are the principal cities among the Barbary States. FEZ, one of 4. Principal the capitals of Morocco, is in the interior; but the Sultan and his court do not reside there all the year. Name the other capital. TANGIER, on the coast, is better known. Why should

Fig. 513. - A Zulu woman making a carpet.

it be? In Algeria, the seaport ALGIERS is the capital and largest city. It is an interesting place, having both ancient and modern buildings side by side. Under the French it has become an important trading center. The same is true of Tunis, the capital of the country by that name. Locate the capital of Tripoli.

3. Southern Africa

In some important respects northern and southern Africa are much alike, although

they lie in different hemispheres. How do they resemble each other in climate (p. 874) and surface features points of simi-(p. 878)? There is a resem-larity to north-blance, too, in the fact that both em Africa sections have long been settled by white men. What difference is there in the length of time that white men have occupied the two regions?

It is to the Dutch that we owe the first important development of South Africa.

Settling at Control of Cape Town, the region and then 1. By the spreading Dutch over the neighboring region, they took possession of the country occupied by the negroes, and introduced the industries of farming and ranching.

When Cape Colony, now called Cape of Good Hope, came into possession of the British (p. 377), many of the Dutch remained; but others emigrated, or "trekked," northward to find new homes in the interior, where they set up two republics, the Transvaal and the Orange Free State, in which they wished to continue the

customs of their forefathers and follow the occupations of farming and herding.

Doubtless the *Boers*, as these people are called, would have been left to themselves but for the discovery of rich 2. By the deposits of gold in their new English and territory. The mines were other peoples worked by British capital, and trouble arose between the mine owners and the Boers. War followed, as a result of which the Transvaal and the Orange Free State were declared British colonies in 1900. Even before this the British had gained control of

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a large tract of land to the north of the Dutch country, in tropical Africa.

At present, therefore, the British control a broad strip of territory from the southern tip of Africa northward to the southern end of Lake Tanganyika. What are the names of the British colonies in South Africa (Fig. 495)? They are now united to form The Union of South Africa.

There are many British in South Africa, especially in Cape of Good Hope and at the

Fig. 514. — Workmen picking out diamonds at Kimberley.

sold mines of the Transvaal. There are also many savage negroes in this region, particularly in the tropical section, and in Zululand in northern Natal (Fig. 326). Some of them, like the Zulus (Fig. 513), have fiercely opposed the advance of the whites, and still maintain partial independence. They have made some progress toward civilization.

Along the eastern coast, and in some of the interior valleys, agriculture is an important industry. Sugar cane, bananas, pineapples, tea, coffee, and rice are raised near the coast, where the climate is warm and damp. But wheat, tobacco, vegetables, and grapes are grown in the cooler south and upon the

uplands wherever the rainfall is sufficient, or where irrigation is possible.

By far the greater part of South Africa is an arid plateau, and its elevation causes cold winters in spite of the latitude. Forests are lacking; but grass springs into life after the summer rains (November and December), and the country becomes green and beautiful. Then follows a long drought, when vegetation withers; but, as in the arid part of western United States, the grass dries

on the ground and becomes hay upon which cattle and sheep thrive.

Upon this plateau, therefore, immense numbers of cattle, sheep, and goats are raised, and also many ostriches. In Cape of Good Hope alone there are about nineteen million sheep and goats, two million cattle, and three hundred and fifty thousand ostriches. From this it follows that the production of wool, hides, meat, and ostrich feathers is of great importance. Of what value are these products to Great Britain?

The discovery of gold in South Africa has brought great changes, as it did in the arid section of western United States. The gold is found scattered through a large bed of rock in the Transvaal, near the city of Johannesburg, which on account of the valuable mines has become one of the largest cities of South Africa. This is now the most important gold-producing region in the world; indeed, more gold is mined here than in the whole United States.

Other valuable minerals, including copper, iron, and coal, also occur; but as yet they have been little developed. At KIMBERLEY, there are wonderful diamond mines, which now supply most of the diamonds used in the world.

The diamonds occur as rounded crystals in a partly decayed volcanic rock, and are obtained by digging out the soft rock and carefully removing the crystals (Fig. 514). After this, the crystals must be cut into the proper shape and polished. There are various grades, some clear and beautiful, others impure and dull. So productive is this deposit of precious stones that it has already yielded three hundred million dollars' worth of diamonds.

The two chief rivers of South Africa are of little use as trade routes. The Orange River is not navigable, because of lack of water; moreover, for transportation the plateau. The other large river, the Zambezi, is navigable by small boats for a distance of three hundred miles



Fig. 515. - A steamboat on the Congo.

from its mouth; but the climate near the coast, especially on the delta, is warm, damp, and unhealthful. Rapids check further navigation, and at one point there is a cataract, the Victoria Falls, which rivals even Niagara in grandeur. This cataract has a width of over a mile, and a height of four hundred and fifty feet. It is therefore both wider and higher than Niagara; but the volume of water is less.

Not only are the rivers unsuited to the needs of internal commerce, but the coast is unfavorable to foreign commerce. For long distances there are no good harbors, while the river mouths are choked with sand bars.

A breakwater has made Table Bay a

good port, and around its shores, beautifully situated at the base of Table Mountain (Fig. 498), is CAPE TOWN, Principal the capital and largest city cities of Cape of Good Hope. It is connected with the interior by a railway, which forms the southern end of the proposed railway from Cape Town to Cairo.

A second important harbor is that of Delagoa Bay, upon which is situated Lourence Marquez, the capital of Portuguese East Africa. Being connected by rail with the interior, this port has been much used for the shipment of Transvaal products. Durban, the seaport of Natal, is a small city also connected with the Transvaal by rail.

The two principal interior cities are KIMBERLEY and JOHAN-NESBURG. For what are they noted (p. 385)? There is no important town in German Southwest Africa, which for the most part is an arid plateau. To what nation does Walfisch Bay belong?

4. Central Africa

This vast area is in large part unknown. Much of it is tropical forest; but on the

northern and southern sides are open savannas (p. 374).

Owing to the heavy rainfall of the forest belt, the rivers are large. The Nile and Zambezi, already described, value of the and the Niger and Congo, rivers for all receive water from the transportation equatorial rains. The Niger is navigable in sections; but there are rapids in some parts, and in its northern portion the river dwindles in size because of the dry climate there. Its large tributary, the Benue, is navigable.

It is the immense Congo, which empties into the sea a few degrees south of the equator, that offers the best natural highway to central Africa. Unfortunately

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there is a series of falls in the river a short distance from the coast; but above Stanley Pool there are thousands of miles of navigable waters in the main river (Fig. 515) and its tributaries.

It was Stanley who first explored the Congo, in 1876; and since that time this part of Africa has been rapidly developing. Formerly it was necessary to carry goods around the rapids, each native porter carrying about sixty pounds on his back.

Only in this way was Stanley able to take his boats

tropical forests. The full-grown men are only three or four feet in height. They live by hunting, by gathering the vegetable products of the forest, and by theft from the neighboring agricultural tribes. Their villages are usually built in the forest where two paths cross. In that hot climate they find little need for clothing.

With a small spear, a short bow with poisoned arrows, and a knife, they hunt with wonderful skill; and by means of pitfalls they capture even the elephant. They know all the forest paths, and neither bird nor beast can escape them. According to Stanley, they offer one of the greatest obstacles to explora-



Fig. 516. - A negro village in Africa.

to the navigable portion farther upstream. Now, however, a railway, two hundred and fifty miles in length, connects the lower Congo with Leopoldville, on Stanley Pool, above the falls. Thence, at all scasons of the year, steamers may go a thousand miles up the river, and also into many of the tributaries.

Very few Europeans have settled in central Africa and the native blacks live almost as their ancestors did.

Most of the inhabitants live in huts made of brush, or some similar material, and clustered in villages (Fig. 516). They have a kind of tribal government, each tribe having a leader whose power is absolute, and under whom are minor chiefs. Some of the tribes are cannibals.

Among the blacks none are more remarkable than the pygmies, whom Stanley discovered in the dense

tion; for they are stealthy, they attack a party with great courage, and can easily escape pursuit in the trackless forests.

European nations have been active in claiming the greater part of central Africa; but they have little real control Divisions over the native inhabitants. of this region The following are some of the more important parts of central Africa.

The Sudan includes the vast area that lies between the Sahara and the tropical forest. What can you tell about its climate (p. 374)?

More than half of the Sudan is claimed by the French, and most of the remainder, including Nigeria and the Egyptian Sudan, is held by the British. The inhabitants in the north are nomadic, while those in the

south are agricultural, though they raise little more than is needed for their own use. There is some gold in the west; but the principal products are ivory, ostrich feathers, ebony, rubber, and gums.

The Sudan is difficult to reach, being bordered by the Sahara on the north, the tropical forest on the south, and the plateau edge elsewhere. Water routes are of little service, since some of the drainage is into the interior basins, like Lake Chad, and some into



Fig. 517. — Negroes and a native hut in Central Africa.

the Nile and Niger. The difficulty of reaching Timbuktu, for example, is shown by the fact that there is still an important caravan route from that place across the wide Sahara to the Mediterranean (p. 378).

A railway to connect Timbuktu with the coast is now partly built. What effect must this have on the caravan route, if completed? Why? A railway has also been proposed across the Sahara from north to south; and already there is a railway into that part of the Sudan which the Nile crosses. With railways much of the open savanna country of the Sudan will doubtless be found attractive to white settlers.

East of the Sudan is Abyssinia, which is, for the most part, a rocky plateau, crossed by mountains, and difficult of access. The condition of this country is well shown by the fact that the position of the capital is changed when the supply of firewood is exhausted. It is evident, therefore, that

there are no government buildings. The inhabitants, who are mainly of the white race, belong to different tribes which are often hostile to one another. Many of the people still hold to Christianity, in spite of the invasion by Mohammedans nearly four centuries ago. The exports of Abyssinia include coffee, hides, skins, ivory, and gold.

Abyssinia is surrounded by colonies of other nations. Italy holds Eritrea and

Italian Somaliland. What other nations occupy a part of the coast on the border of Abyssinia?

The map shows several small countries on the west coast of Africa. The divisions colored pink tries on the west belong to the

British; those marked green to the Germans. What are some of their names? Find a section belonging to Spain. What parts are controlled by France?

One of these small countries is *Liberia*, which is of special interest to Americans. It is a negro republic, established in 1822 by Americans as a home

for freed slaves; and its capital, Mon-ROVIA, is named after President Monroe. No white man is allowed to become a citizen. The republic was modeled after Sierra Leone, next to it on the west, which the British founded as a home for liberated slaves.

Belgian Congo, crossed by the equator and drained by the Congo and its tributaries, was founded by Leopold, king Belgian Congo of Belgium, who supported and neighbor-Stanley in his explorations of ing territory this region. It is now under the control of Belgium. It is in large part a forest-covered plateau, but there are extensive areas of grass land. Hordes of savages, including the pygmies, inhabit the forests and savannas; the buffalo, elephant, and leopard live on the plains; and the roar of

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the lion is frequently heard. Large quantities of rubber, ivory, palm oil, gum, and cocoa, as well as tropical woods, are obtained from this region. Some gold is also exported.

East of the Belgian Congo are British and German cerritories. What are their names? What can you call about their climate (p. 374)? What products would you expect?

Observe to what extent the British claim Africa.
What break is there in the British territory between
the Cape of Good Hope and the Mediterranean?
What variety of climate do these British colonies
anclude?

Several railways have already been men-Where are they? Besides these, cioned. and parts of the great rivers, The need of enore railways the three large lakes - Nyassa, Tanganyika, and Victoria Nynza — are of great service in the transportation of goods. Already there are teamers upon these lakes. A railway conmects Victoria Nyanza with the sea, and thers are planned. But many more railways are needed; for otherwise caravans f native porters must bear the products on heir backs, traveling along narrow paths hrough the forest.

5. Islands near Africa

The island of Madagascar, which is larger than any of our states except Texas, lies a little more than two hundred miles from the mainland. It contains much highland, especially on the eastern side; but the coastal region is low-land. The island is controlled by the French, and produces cattle, hides, valuable tropical woods, rubber, and coffee. While there are some Arabs, and tribes of negro origin in the west, the natives are for the most part Malays, called *Hovas*, who came by water from the northeast.

The principal small islands on the eastern side of Africa are Zanzibar (British) near the coast, and Réunion (French), and Mauritius (British) east of Madagascar. Find each of these (Fig. 496). There are many others, as you can see. These islands are

of value as naval stations. Their inhabitants are engaged in fishing and in agriculture, raising sugar cane and other tropical products.

Of the many small islands near the western coast the northernmost are the Madeira Islands. These, together with the Cape Verde Islands farther southwest, have belonged to Portugal since the early Portuguese voyages of discovery (p. 377). The Canary Islands,

which belong to Spain, lie between these two groups.

Ascension Island and St. Helena, south of the equator, are volcanoes, like the other groups of islands just named. They belong to Great Britain. St. Helena is noted especially as the prison home of Napoleon Bonaparte.

1. What is the general shape of Africa? What

about the regularity of its coast line? 2. Describe the arrangement of its mountains Review and lowlands. 3. State the effect Questions of this arrangement on the rivers. 4. Where are the principal lakes, and what are their names? 5. Describe the climate in general. 6. Tell about the forest belt. 7. The savannas north and south of it. 8. The two desert regions. 9. What about the native plant and animal life? 10. What about the native inhabitants of Africa? 11. Tell about the exploration and settlement. 12. What are the divisions of northern Africa, and what is their form of government? 13. What is the area of the Sahara? 14. Describe its surface features. 15. Tell about the caravans there. 16. Describe the climate of Egypt. 17. What can you tell about the Nile River? 18. Name the agricultural products of Egypt. 19. Give some facts in the history of that country. 20. Locate and describe the Suez Canal. 21. Locate and state the chief facts about the leading cities. 22. What about the surface, climate, and products of the Barbary States? 23. What is the character of the people? 24. Name and locate the principal cities. 25. How does the southern part of Africa resemble the northern part? 26. State what you can about the government of the southern part. 27. What do you know about the agriculture there? 28. The mining? 29. The lack of conveniences for transportation? 30. Locate and state the chief facts about the leading cities. 31. How valuable are the rivers of central Africa for transportation? 32. Tell about the native inhabitants. 33. Locate the Sudan and name its divisions. What about conveniences for transportation there? 34. State the principal facts about Abyssinia and surrounding territory. 35. Name and locate the small countries on the west coast. 36. State the principal facts about the Belgian Congo and neighboring territory. 37. Explain the need of railways there? 38. Locate and describe Mad-

agascar. 39. Locate island groups near Africa. To

what nation does each group belong?

1. Give several reasons why Africa has been explored and settled so much later than either North General review or South America. 2. What rivers of North America resemble those of questions and Africa in having rapids and falls comparisons that interfere with commerce? How have these obstacles been overcome in our rivers? 3. Contrast the Mississippi River with the Nile. Make a drawing of each, showing the principal tributaries and towns. 4. Compare the Congo with the Missouri in length; with the Amazon (Appendix, p. 481). 5. Compare the area of Lake Victoria Nyanza with that of Lake Superior (Appendix, p. 431). 6. Is Africa, on the whole, as well adapted to agriculture as is South America? Give your reasons. 7. Make a sketch map of the Atlantic, and compare the position of Africa with that of South America. What part of America is in the same latitude as the Sahara? 8. Cape Horn is how much farther south than Cape of Good Hope?

9. Why is not a large part of northern South America a desert, like northern Africa? 10. Compare southern Africa with southern South America in products and importance. Why the difference? 11. What products of Africa are also cultivated in the United States? 12. What products of Africa are not raised in our country?

1. What per cent of the present population of the United States belongs to the negro race? 2. Read the Bible story of Joseph in Egypt. Suggestions 3. Read the story of Moses. 4. Find out some facts about the Pyramids. 5. Why is England especially benefited by the Suez Canal? 6. What obstacles are in the way of building railways across the Sahara? 7. Read about our short war with Tripoli in 1804. 8. Why was the southern point of Africa called the Cape of Good Hope? 9. Examine a diamond to see how it has been cut. 10. Find out something about missionary work in Africa. 11. Find out about the peculiar animal life upon the island of Madagascar. 12. Find some facts about Livingstone, Mungo Park, Stanley, and other African explorers. 13. Read one of the books of these explorers; you will find Du Chaillu's books on Africa very interesting. 14. Who were Bartholomew Diaz and Vasco da Gama, and what part did they take in the discovery of the water route to India? 15. Find out about Kruger and the British war with the Boers in 1900.

III. AUSTRALIA AND ISLAND GROUPS

I Australia

1. Judging from the railways and cities, which is the best settled part of Australia? 2. Which part is least settled? 3. Can you suggest Map Questions any reasons for these facts? 4. From the lakes and rivers, what do you conclude concerning the climate of the interior? 5. How does Tasmania compare in area with Pennsylvania (Appendix, p. 425)? With your own state? 6. Make the same comparison for New Zealand. 7. For Borneo and New Guinea. 8. What nations claim parts of Borneo? New Guinea?

Australia lies apart from the rest of the world. It is the smallest of the continents, the only continent wholly sur-Location rounded by water, and the and area only continent wholly in the southern hemisphere. With its area of three million square miles, it approaches the United States or Europe in size.

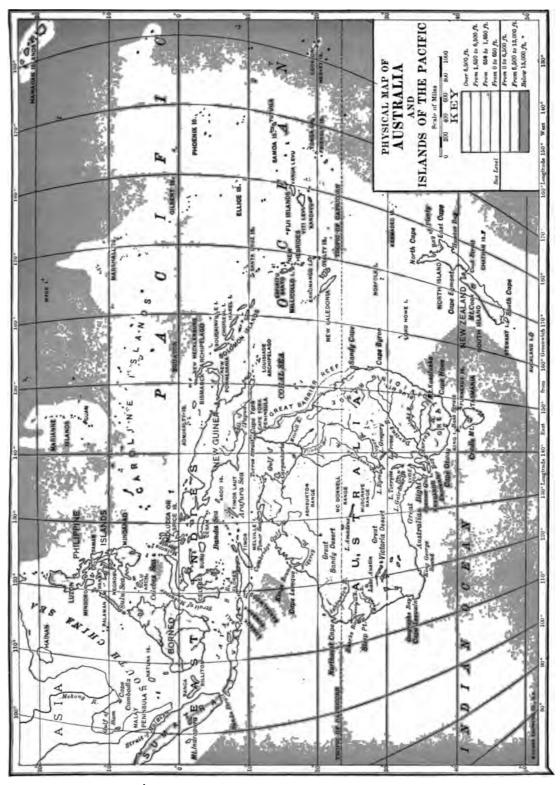
The surface, like that of Ireland, suggests a plate in form, since the low interior rises gradually to a broken rim of Surface plateaus and mountains of features moderate height. While there are some low, short ranges in the interior, the highest land is in the east, where the mountains run parallel to the coast. In the southeast some of the peaks reach a height of over a mile.

The coast of Australia is so regular that for long distances there are no good harbors; but the sinking of the land in the southeastern part has formed some excellent ports. Off the northeastern coast is the *Great Barrier Reef*, the longest coral reef in the world.

What is the latitude of the northern part of Australia? Of the southern part? What, therefore, can you say about the temperature of the continent?

Australia lies within the belt of the southeast trade winds (Fig. 300). The eastern highland, therefore, has an abundant rainfall, on its seaward side, and is clothed with dense forests. After crossing the mountains, however, the winds are so dry that the forest gradually disappears; and the interior is a vast desert. It is therefore only along portions of the coast that there is enough rainfall for agriculture, while the interior, and much of the greater part of the continent, is either arid or desert.

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The maps of Australia show a striking lack of large rivers. Some of the streams

Effect of rain-₹all on rivers and distribution

end in salt lakes, and others evaporate in the dry climate. Many unite with the Darling tion of popula- and Murray rivers; but these only at times are navigable for

During the dry summer long distances.

the southeastern part seems capable of supporting a dense population.

Australian vegetation is peculiar and well suited to the climate of the country. Among the desert grasses, one of Native plants the most remarkable is the porcupine grass, which is so hard, wiry, and spiny as to

prevent passage through it.

The "scrub" trees of the arid interior have de-

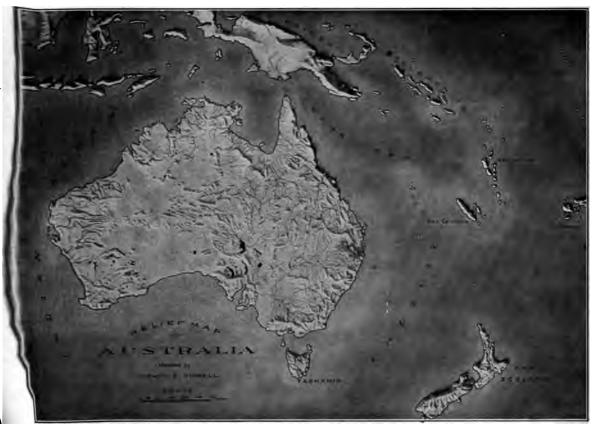


Fig. 520. - Relief map of Australia.

season all except the Murray may dwindle to mere chains of water holes. A sand bar at the mouth of the Murray River closes it to ocean steamers, so that, unlike the Mississippi, no large cities have grown up along its banks.

Partly because of the desert, and partly because of the absence of navigable streams, there are large tracts in the interior about which, even now, little is known. Only

veloped a foliage able to resist evaporation. For example, the gum trees (Eucalyptus) hold their narrow leaf blades vertically, with only the edges toward the sun's rays; the leaves of wattles (Acacia) and other plants have shrunk to thorns; and some trees secrete odorous oils which check evaporation. Plants with leaves which taste of salt also thrive here. These "salt bushes" are so valuable as forage for sheep and cattle that they are now introduced into the arid section of southwestern United States.

On the equable rainy slopes, near the coast, some of the gum trees are giants. They rival the "Big



Fig. 521. - Tree ferns and other undergrowth in the Australian forest.

Trees" of California, which also thrive where damp winds blow from the ocean. The undergrowth of the forest (Fig. 521), which is almost tropical in character, includes tree ferns, palms, and orchids. These dense woods are called the "bush."

Figure 523 shows the more important animals, including the rabbit, which was introduced into Australia from Europe. What are their names? They are very different from animals in other parts of the world, because Australia is so far separated by water from all the other continents that animals from other places have not been able to migrate there.

When discovered, Australia was sparsely settled by blacks, related to the negroes of Africa. Some of these natives still live in the interior, building the rudest of shelters, and their manner of life againing their living by hunting. They still use that peculiar weapon, the boomerang, which, when skillfully thrown, will fly in curves and even return to the thrower.

Although it had long been known that there was an Australian continent, settle2. Early setments were not made there until 1788. For a time the distant land was used as an English prison; and naturally, under such conditions, not many free settlers came to the country. Some came, however, and as their number

increased, they brought it about that criminals were no longer sent there.

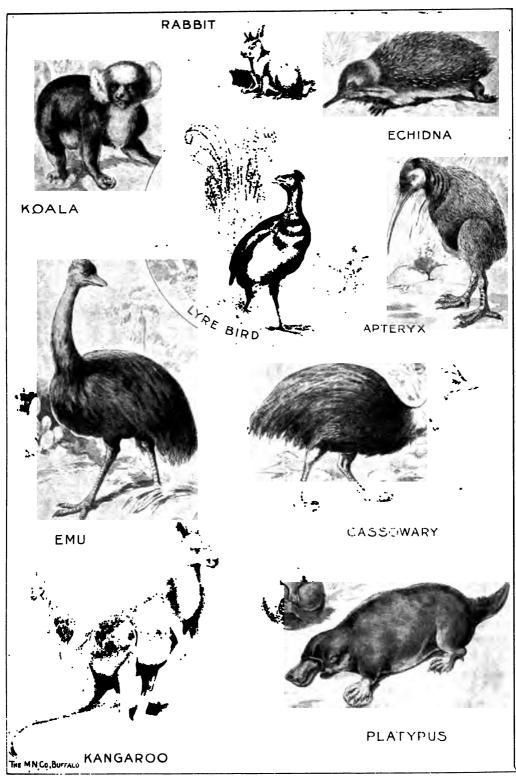
Almost at the same time that gold was discovered in California, it was also a. Effect of found in Australia, discovery of and tens of thousands of people rushed there to wash the sands for the precious metal. Since the miners needed supplies, many of the settlers turned their attention to other industries, especially agriculture and grazing. Therefore, in Australia, as in California, the gold mines quickly led to the development of the country's resources.

New South Wales, as the first colony was called, finally grew so large, and the settlements were so scattered, that it became difficult to control the whole colony under a single government. To meet this difficulty, Tasmania, Victoria,



Fig. 522.—Australian natives, who have just killed a kangaroo with the boomerang.

The boy holds a boomerang in his hands.



 ${\it Fit} i (523.) \times {\it Some}$ of the Australian animals.

and Queensland were one by one set off as separate colonies. South Australia and Western Australia were settled as distinct colonies.

The colonies have so many interests in common, that, in 1901, they united to form the Commonwealth of Australia. This new commonwealth has a government similar to



Fig. 524. — Density of population in Australia and neighboring islands.

that of Canada, and is independent of England in all matters except those which affect the British Empire as a whole.

Although it was gold that brought the

Agriculture rush of settlers to Australia,

1. Sheep flocks of Merino sheep. Australian wool is the finest in the world.

Sheep were first known in Asia, where doubtless they were originally wild animals; and the ancestors of the Merino were such as those tended by Jacob. From Asia the breed spread along the Mediterranean and found in Spain a favorable, dry climate. From this point flocks were taken to the early Dutch colony of South Africa, and thence to Australia. Here the dry climate and native plants have still further improved the quality of the wool.

In the early days of Australia the flocks were reared upon the unfenced government land, as in the western part of the United States (p. 133). The sheep were driven to pasture and watered and cared for at night

by lonely shepherds, much as in the days of David. Now, however, the land is largely fenced with wire, each sheep station having its own run, or ranch. To-day grazing is the most typical as well as the leading occupation in Australia. There are over eighty-three million sheep, and wool is the principal export of the commonwealth.

Horses, cattle, and swine are also raised in large numbers; and frozen or canned beef and mutton, together with hides and tallow, are exported. Many cattle are raised for their dairy products, and butter is sent to England. At the season when the cows of Belgium and Denmark are kept in barns on account of the cold, the dairy herds of New South Wales feed on fresh pastures. How can you account for this fact?

On the damp lowlands, where there is rainfall enough, and in the interior where irrigation is possible, there is much farming. Next to hay, wheat (Fig. 536) is the most important crop, and flour forms one of the chief exports of the country.

The farm products vary with the climate. For example, oats and other hardy grains are raised in the cooler south, while corn is important only from New South Wales northward. There are large sugar plantations in Queensland; and along the northern coast tropical products are obtained. Much fruit is raised, and this, too, varies with the climate. Oranges are grown in the north, and the orchard and small fruits of cool temperate lands in the south. In Victoria and South Australia, there are many vineyards.

On the coral reefs east of the mainland, and along the northern coast of Australia, small sailboats are engaged in Fishing and fishing for pearls, pearl shell, mining and other products of tropical waters.

The gold of Australia, like that of California, was first found in the gravels; but mines were later opened along the veins in the mountain rocks. Gold mining is still very important, and Australia ranks third among gold-producing nations (Fig. 556).



Fig. 525. - Harvesting oats in Australia.

Copper, silver, and tin are other important netals found in Australia. Coal of good uality exists in several places, the best-eveloped field being near the coast of New outh Wales. Rich iron ores, together with mestone, are found near these coal fields.

Some wool is woven into cloth; some eather is tanned and made into shoes; and much flour is made from the wheat. There are sawmills and laning mills; and other forms of simple nanufacturing are carried on. But most of the manufactured goods used in the country re imported. They are largely obtained from

England, and are paid for with raw products.

Australian cities have grown very rapidly, and one third of the people live in the capipal cities tals of the six divisions of the 1. The capitals commonwealth. These capitals are seaports connected with the interior by railway, and have therefore become the leading commercial centers. They have fine government buildings and large public parks and gardens.

MELBOURNE, the second city in size in Australia and the capital of Victoria, is

beautifully situated at the head of a broad harbor. Sydney (Fig. 526), the largest city of Australia and the capital of New



Fig. 526. - A street in Sydney, in New South Wales.

Wales, was founded in 1788, and is, fore, the oldest city of Australia.

of these cities rank among the t seaports of the British Empire.

ELAIDE is a third large city. Of which ision is it the capital? Name the other pitals.

Since nine tenths of the Australians live on the ast lands, much of the commerce is carried on by means of steamboats, and most of the cities are seaports connected by rail with the interior farms, mines, id sheep country. A few mining centers, like BAL-ARAT and BENDIGO, in Victoria, have become large was.

2. Island Groups

More than a thousand miles southeast of ustralia are the two large mountainous isw Zealand lands of New Zealand. In surface and South Island there are great glaciers among the mountains; hile in North Island there are active voluoes, and also hot springs and geysers



Fig. 527. — A geyser in eruption in New Zealand.

(Fig. 527), like those of the Yellowstone National Park.

Since these islands lie in the belt of stormy west winds, there is heavy rainfall on the western slopes. The mountains are therefore clothed with forests of pine and other trees. On the lee, or eastern, slopes the rainfall is less, and the land is covered with wiry grasses. What effect must the presence of water on all sides have upon the temperature?

The native people, or *Maoris*, who must have come to the islands in boats, were a hardy, warlike race, living in protected villages, in the midst of cultivated fields. At first they opposed the white men, and the country was not settled until a half century after the founding of Sydney. After a time the Maoris were conquered, and those that survive live mostly in the interior of the North Island. Many of them are civilized, and they are now allowed representatives in the legislature.

As in Australia, pastoral industries take the lead. There are twenty million sheep, and wool and frozen mutton 3. Industries are exported to England. Cat- and government tle are likewise kept, and butter is exported. Agriculture is important, but much land that is suited to farming has never been cleared of forest.

A

In the south the crops are those of the cool temperate belt; but in the north the climate is mild enough for the growth of oranges. There are gold, silver, and coal mines among the mountains; and valuable timber is obtained from their slopes. Manufacturing is only slightly developed, and is chiefly for home use.

The situation of these islands, in the temperate zone, is favorable to rapid progress, and the British people who have settled here have done much to develop the resources. They have also established one of the best governments in the world. Being so far away from Australia, and therefore, with such different interests, New Zealand has not joined the Australian Commonwealth.

Several short lines of railway connect the settled interior with the seaports; roads and stage lines extend to the more distant districts; and steamers ply around the coasts and to distant countries. There

are four cities of nearly the same size, the smallest of which is DUNEDIN, and the largest, AUCKLAND. Find the other two.

Between Asia and Australia are hundreds
of islands, some very large, others so small
that they find no place on our
map. Of these the greater
number have animals, plants,
and people similar to those of
Asia. New Guinea, however, which is
mearest to Australia, resembles that contiment rather than Asia.

While the islands farther west are overrun with Malays from Asia, the natives of New Guinea are like the native Australians. The animal life also resembles that of Australia. It is believed, therefore, that New Guinea and Australia were once connected. For these reasons New Guinea is usually considered part of Australia, while the islands to the west and orthwest are classed with Asia.

The Philippine Islands, which belong to the United states, are really a northern extension of the East dies. What can you tell about them (p. 158)?

Many of the islands of this region, inluding Sumatra, Java, the Celebes, and a

Government large part of Borneo and New

the Islands Guinea are Dutch colonies.

What nations control the island of Timor?

Vhat three nations have possession of New

Juinea?

The immense size of these islands is shown by the sect that Java has a greater area than New York State, while Sumatra is larger than California. Borneo, one of the ergest islands in the world, is larger than all the lew England and Middle Atlantic States together.

New Guinea, another of the largest islands in the world, has an area greater than that of Texas. The Dutch East Indies alone are fifty-eight times as large as The Netherlands, and have over six times as many inhabitants, or not quite half as many as the United States.

All of the larger islands are mountainous; in fact, they are parts of mountain ranges 4. Their surrising out of the sea, and among face and climate them are many active volcanoes, some of which have had terribly destructive eruptions. Many of the smaller islands are merely coral reefs slightly raised above the ocean.

Lying so near the equator, all the islands have a tropical temperature and heavy rainfall. The dampness and heat together make them very unhealthful in places. Because of the climate, and of the mountains and the dense jungles, there are large areas which have never been explored.

The forests supply valuable woods and gums, including rubber and camphor. Large areas, especially in Java, are highly cultivated and produce quantities of rice, sugar cane, and coffee.



Fig. 528. - New Guinea houses built in trees.

In the production of the last two articles, Java is one of the leading regions of the world (Figs. 539 and 542). Among the noted products of the East Indies are spices, such as pepper, cloves, and nutmegs; in fact, one of the island groups is known as the Spice Islands. What is its other name? There are also valuable minerals, including tin, gold, and precious stones; and in the tropical sea beautiful pearl shells are found.

The largest city among all the islands in this region is MANILA, in the Philippines; and next in size is BATAVIA, the center of the Dutch colonial government.

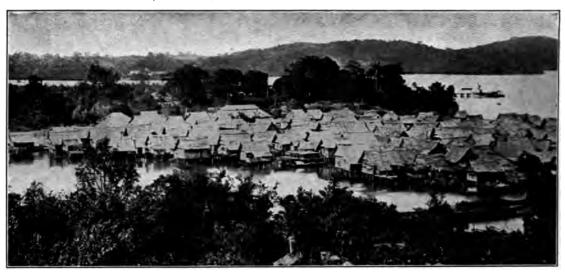


Fig. 529. - A Malay village built on piles in the water.

The map (Fig. 518) shows the western Pacific dotted with island groups; but all these islands are very small. What names among

Islands of the them have you heard before? Name and locate those that belong to the United States. All together, these thousands of islands have a population of less than a million

persons. The "high," or volcanic islands, like Fiji and New Caledonia, have peaks which rise several thousand feet. On these islands there are sugar and coffee plantations, as in Hawaii, while tropical fruits, such as bananas and pineapples, are raised in large quantities.

On the "low," or coral islands, (on the other hand, the cocoanut palm is the mainstay of human life, supplying food, clothing, shelter, boats, and many utensils. Copra, the main export from Samoa, and from many other Pacific islands, is the dried meat of the cocoanut. It is of value for food, as well as for its oil.

1. Describe the surface of Australia, including the coast line.

2. Describe the Review climate. 3. State **Ouestions** the effect of the rainfall on rivers, and distribution of population. 4. What the native plants? 5. Native animals? 6. In the history of the country, give some facts about the native inhabitants; the early settlements; effect of discovery of gold; the government. 7. State the principal facts about sheep

ranching. 8. Other animals and animal products. 9. Name the chief farm products. How are they distributed? 10. What about fishing? 11. What mineral products are found? 12. What is the condition of manufacturing? 13. Name and locate the principal cities. For what is each important? 14. What are the surface features and climate of New Zea-

land? 15. What about the native inhabitants? 16. The industries and government? 17. Name and locate the chief cities. 18. Tell about the East Indies; divisions among them; government; area; surface and climate; products and chief

19. What can you tell about the islands of the Pacific?

1. Australia resembles South Africa in its surface, climate, occupations, and prod-

ucts. Show how this is true. 2. Australia also general review resembles the western part comparisons of the United States in climate, in occupation and products, and

in the order of development of her resources. Show how this is true, also. 3. In what respects does southern South America (Chile and Argentina) resemble Australia? 4. What part of Australia has the same latitude, in the southern hemisphere, that



Fig. 530. - A native of Fiji Islands.

southern Florida has in the northern? 5. Which one of our states most nearly equals New Zealand in area? 6. What peninsula of Europe resembles New Zealand in shape? How do the two countries compare in area? In population? 7. What part of South America most resembles the East Indies in climate and products? What part of North America most resembles them in these respects?

1. If it were within your power, how would you arrange the highlands of Australia so as to secure the most even distribution of rain?

2. Estimate the greatest length of live Zealand. Compare it with a line extending from New Orleans northward.

3. Estimate the distance from Batavia to Manila.

4. Write your im-

pression of the climate of Melbourne in January; in July. 5. Through some fruit dealer obtain a cocoanut in its husk, and examine it. 6. Read Whittier's poem on the Palm Tree. 7. Learn something about the work of missionaries in the small Pacific islands. 8. Collect pictures for the school, showing the Pacific islands and their life. 9. By what routes can one go from New York City to Australia? Through what waters? Which route is the shortest? About how many miles shorter? 10. Answer the same questions for a voyage from New York to Manila. 11. Read in Tarr's "Elementary Geology" (pp. 251-256) about the origin of atolls. 12. Read about the eruption of Krakatoa (same book, p. 343) in the Sunda Strait, near Batavia.

REVIEW OF UNITED STATES AND PART VI. OTHER COUNTRIES * COMPARISONS WITH

In spite of the vast extent of the United States, there are four empires Area and population in the Old World with a greater area.

Which country is fifth in size? Sixth? Compare the United States with each of these in area.

The United States

North America compare with that Europe? Compare the sur- Surface face of the United States with features Which are they (Fig. 531)? | that of European Russia (p. 302);

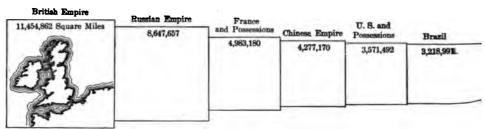


Fig. 531. — Areas of six largest nations (1910).

ranks fourth in population (Fig. 532). Name the six most populous countries in the order of their rank. Figure 534 shows the density of population, or the number of people per square mile, in some of the countries

in the world. From this it will be seen that the United States is very thinly settled, compared with many countries. Compare the United States in this regard with Belgium, England,

Cuba, Mexico, and Canada.

Name and locate the principal mountain systems in the United States; Density of the chief ranges in the West. population in several Describe the drainage of the countries United States. Name and locate our principal rivers. Which continent has its principal mountains arranged most like those of North America? Show this. How does the arrangement of mountains in Brazil (p. 243); of China (p. 361).

What is the latitude of the northern and of the southern boundary of Climate the United States? Compare the latitude of our country with that of the

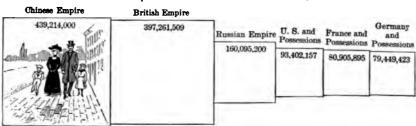


Fig. 532. — Population of six most populous nations (1910).

British Isles (Fig. 2); with that of Germany, Italy, Egypt, India, China, Argentina, Australia.

How do ocean currents affect the temperature of the eastern part of our country? Of the western part (p. 222)? Compare our temperature with that of countries in Europe having most nearly the same latitude (p. 260). Why the difference (p. 261)?

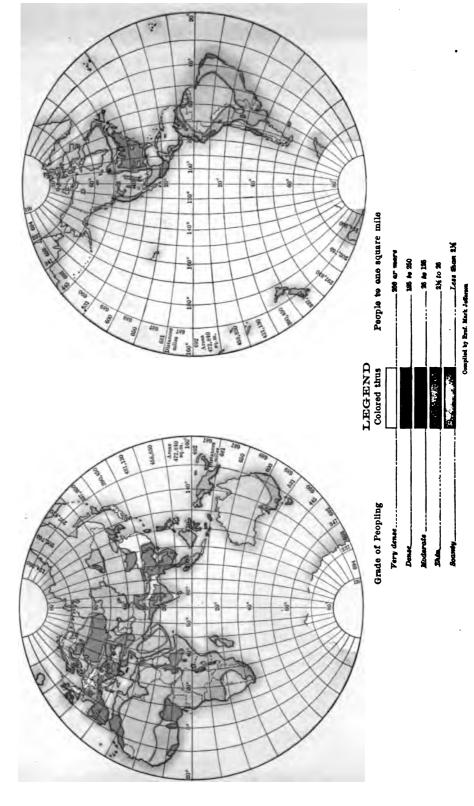


FIG. 533.

			•			
-	•					

Tell about the prevailing winds and the | proaches leadership in several others.

the cyclonic storms and their effects (p. 214); the prevailing winds of Europe (p. 261); the rainfall there, with reasons (p. 217). In what respects are North America and Europe alike in regard to winds and rain?

What about native plants and animals in the northern Native plants part of North and animals America (p. 13)? In the arid part of the United States (p. 16)? In other parts of the United States (p. 17)? In tropical North America (p. 19)? Compare the native plants and animals of North America with those of South America (p. 239); Africa (p. 376); Asia (p. ³⁴3); Australia (p. 391).

In spite of the fact that

Ra w food **Products** more densely settled, the 1. Corn United States leads the world many very important respects, and ap- | Isles (p. 265)?

rainfall in western United States (p. 211); | ure 535 shows that no nation is a close rival

Chile 11	Brazil	6.6	Argent	ina	5.9	Austral	ia	1.5	Canada			1.48
	* *	œ.	4									
		1							1			
	4. 5.											
Russia 66	Cuba	46	United	States	30.9	Hawati		29.75	Mexico			16
********			9.		4.5				100	•		
			1						127			
	1								0			
			100									,
				8.7			53		100			
				0.0	0.01		S 8	00.00	1			
China 266	France	190	India		167	6.2		96	1	ine I	S.	71
	*********		::::	::::	::::				133			: :
**************		:::::	1111		1366				1			
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121323211212111	· · · · · · · · · · · · · · · · · · ·		····					310	1			
Belgium 65	England & Wa	las RIG	Ianan	5123523		Germa	5554 N	210	Italy	444		30
			3412	16101	*****	1::::::	::::		10000	::::	:::	***
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			11111			155000	1111	****				
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					*****	1		::::::		****	***	

some nations are larger and | to us in the area of corn production. What countries, however, raise large quantities of it? Why is no corn raised in the British

GEOGRAPHIC DISTRIBUTION OF INDIAN CORN OR MAIZE

Fig. 535. - Corn sections of the world.

Wheat is more widely cultivated 2. Wheat than corn (Fig. 536). We rank second in the production of that grain. Point out (Fig. 536) the leading wheat fields of the world. Which sections are important for both wheat and corn? On which side of the Atlantic is wheat raised far-

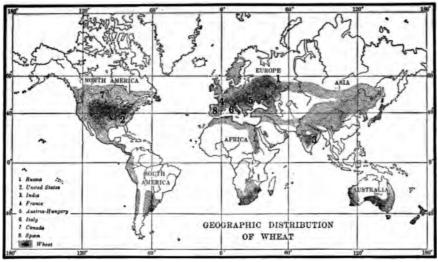


Fig. 536. - Wheat sections of the world.

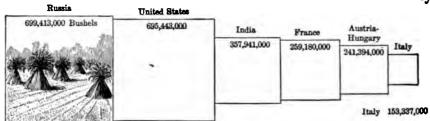


Fig. 537. — Six leading wheat-producing countries (1910).

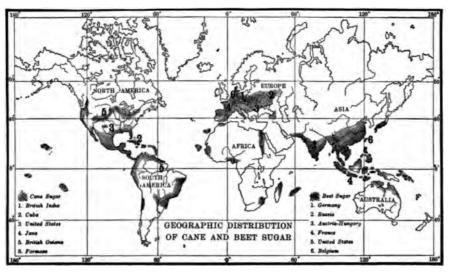


Fig. 538. — Sugar cane and sugar beet sections of the world.

thest north? Why (p. 223)? Name in order the six countries that lead in the production of this grain (Fig. 537).

3. Sugar cane and sugar beets

Note what sections of the world raise sugar cane and sugar beets (Fig. 538). Name countries and islands engaged in these industries. Is it mainly the sugar beet

or sugar cane that is raised in Europe? Why (p. 313)? What is our rank in the raising of sugar cane and sugar beets (Fig. 538)? Name the six regions that lead in this kind of agriculture.

4. Rice

Figure 540 shows the principal rice sections of the world. What continent grows by far the largest a mount? What coun-

tries in that continent?
What other parts of the world produce much of it?
What parts of the United States? What climate does it require, and how is it raised (p. 76)?

Figure 541 that shows coffee is not 5. Coffee grown within our states, although in almost every household it is used every day. Notice, however, that it is produced in Cuba, Porto Rico, and the Philippine Islands (Fig. 541). Τo what climate \mathbf{and} countries is it confined? State the rank of the principal coffee-producing sections, and compare their output (Fig. 542).

Our tea, also, comes almost entirely from abroad. Mainly from what Parts of the

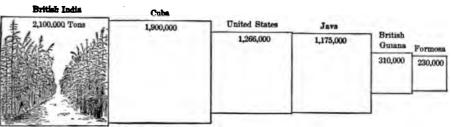


Fig. 539. — The six countries producing the most cane sugar (1910).

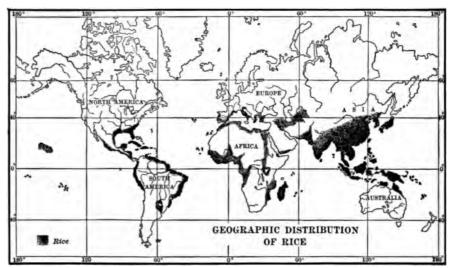


Fig. 540. - Rice sections of the world.

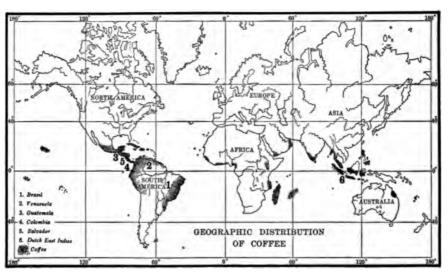


Fig. 541. — Coffee-producing sections of the world.

REVIEW OF UNITED STATES

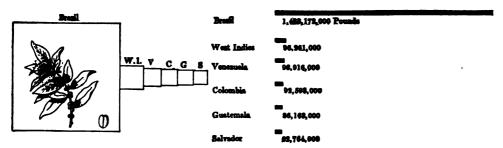


Fig. 542. — Leading coffee-producing countries (1910).

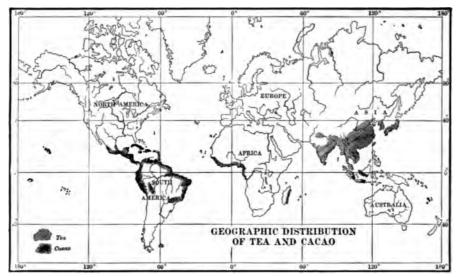


Fig. 543. — Tea and cocoa producing sections of the world.

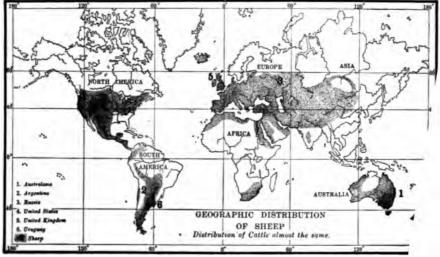


Fig. 544. — Cattle and sheep sections of the world.

Name the principal countries and | iron for use in manufacturing has often been islands.

Note the distribution of cattle and sheep | coal fields are very limited. What coun-

(Fig. 544). What are incountries cluded? Recall some facts concerning sheep raising in Australia, Argentina, and the United States. Why are cattle and sheep

Argentina United States Turkish Empire United 414,465,000 Empire 821,863,000 288,600,000 Kinge 212,000,000 141,940,0

Fig. 545. — The six leading wool-producing countries (1910).

raised in the same regions?

Raw textile **Products** leading wool-producing coun-1. Wool tries. Name them.

the rank of the

United States? Cotton is limited to 2. Cotton warm

climates, so that fewer countries raise it. Name the principal sec**tions** (Fig. 546). Within what parallels of latitude are they found? Name the five Countries that lead in its production (Fig. 547). Howmuch

greater is the Qutput of the

United States than that of the five other Countries together? Figure 548 shows the sections that

Produce silk. What are their names? What about this indus-Raw silk try in the United States? Name the countries, in order, that Produce most raw silk (Fig. 549). Recall how the work is carried on (p. 286).

The great importance of coal and

Figure 545 shows the six | tries have little or no coal? Mineral Name the leading coal-products What is | ing sections, and state the rank 1. Coal

pointed out. Figure 550 shows that the

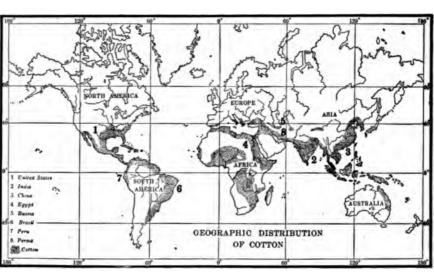


Fig. 546. — The cotton sections of the world.

of the United States in the production of this mineral (Fig. 551).

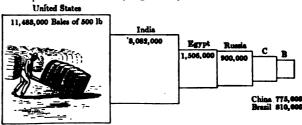


Fig. 547. — The six leading cotton-producing countries (1910).

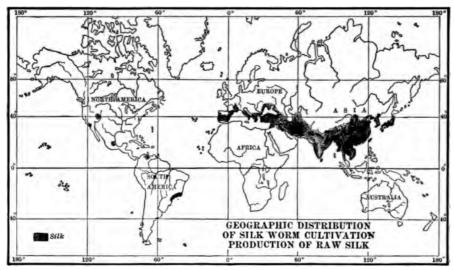


Fig. 548. — The raw-silk-producing sections of the world.

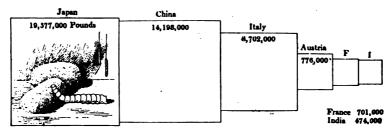


Fig. 549. — The six leading raw-silk-producing countries (1910).

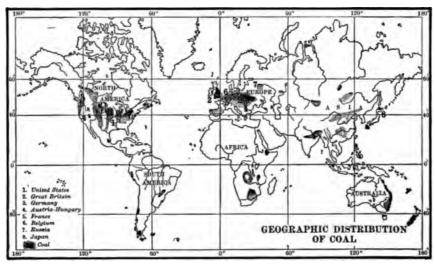


Fig. 550. — Leading coal-producing sections of the world.

The United States leads the world in the production of petroleum, or mineral oil (Fig. 552). The second most important district is in Russia, near the Caspian Sea.

Other districts produce little petroleum. What are its uses?

3. Iron ore and Pig iron

Is iron ore more or less widely distributed than coal (Fig. 553)? How d o es United States rank in the output of this mineral (Fig. 554)? How does the output of coal and iron correspond to the importance of Countries as manufacturing nations (Fig. 560)?

4. The precious

Tell about the distribution of Sold (Fig. 555), and give our rank in the production of that metal (Fig. 556).

Where are the

silver-

Principal

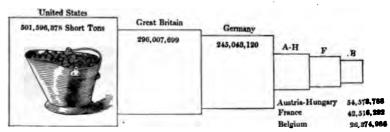


Fig. 551. — The six leading coal-producing countries (1910).

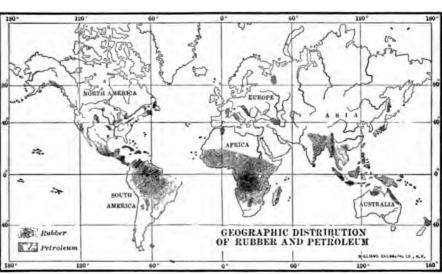


Fig. 552. — The leading petroleum-producing sections of the world.

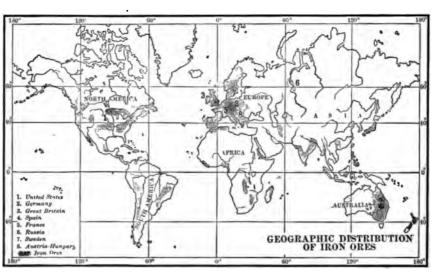


Fig. 553. — Leading sections of the world that produce iron ore.

mining sections (Fig. 557)? How does the | titles of other minerals. Name some United States compare with other countries | them (pp. 105 and 106). In the producti

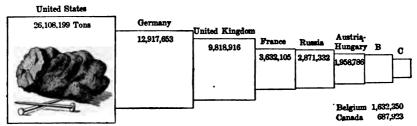


Fig. 554. — The eight leading pig-iron-producing countries (1910).

in this product (Fig. 558)? Notice to what | of some, such as copper and nat- 5. Other min extent the world is indebted to the New ural gas, our country also leads. eral products

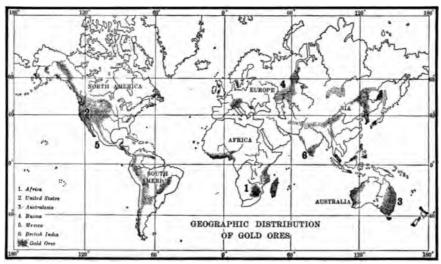


Fig. 555. - Leading gold-producing sections of the world.

World for silver. How does the value of the | total silver production compare with that of | nents lead in manufactur-

According to Figure 559, what two cont Manufacturing

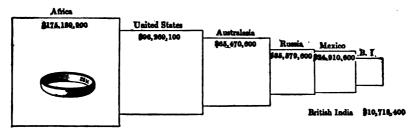


Fig. 556. — The six leading gold-producing countries (1910).

gold in the five leading regions for each?

old in the five leading regions for each? | ing? What other smaller sections are actions are actions to the United States produces great quantum in this industry? Taking into account

the size of our country, the abundance of our rawmaterials. and the energy and intelligence of our people, it is notsurprising that we surpass all other countries in such work (Fig. 560). State the rank of other leading nations in this occupation.

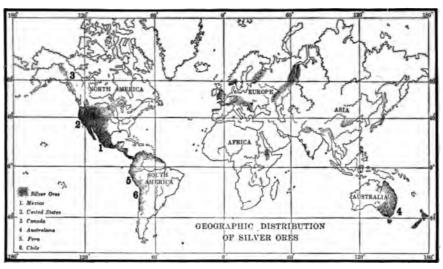


Fig. 557. — Leading silver-producing sections of the world.

Into what articles is corn manufactured in the United States (p. 95)? Where (p. 96)? Answer the same questions about wheat (p. 106). What are the leading centers for the preparation of meats in the United States

(p. 109)? What countries in South America are extensively engaged in this industry $\mathbf{CPp.246}$ and 247)? In what parts of the United States is most cotton manufacturing carried on (p. 82)? Why there? What Other countries have much cotton manufacturing? What countries of the world are noted for the

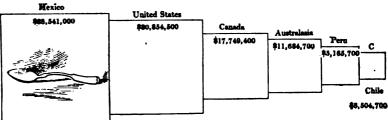


Fig. 558. — The six leading silver-producing countries (1910).

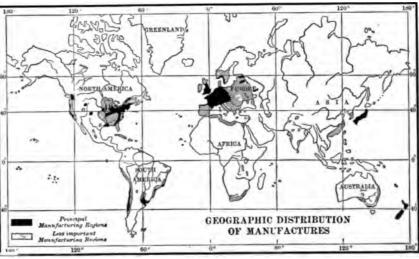


Fig. 559. - Manufacturing sections of the world.

steel goods? Name great centers for this | railway than any other nation (Fig. 561);

United States 13,004 Million Dollars Germany France 5.000 4.600 3,450

-The four leading manufacturing countries.

industry in our own country; in foreign countries.

United State 240,486 Mile Austria- British Hungary India 45,078 87.586 80,709 88, 808 82,099

Fig. 561. — The six countries having greatest length of railways (1910).

United States also takes the leading place. | as follows:—

manufacture of pig iron and other iron and | It has a far greater number of miles of

but several small Euro- Commerce pean nations have a great- 1. Convener number of miles in iences for trans proportion to their area. Portation

The United States ranks second in provision for transportation by water (Fig. 562). State the rank of the five chief countries in total length of railways, and in merchant marine. Give reasons why the United Kingdom should

lead in merchant marine (p. 275). Why should Norway be of importance in this respect (p. 297)?

We produce many more raw products and manufacture many more goods than we can use. 2. Our trade These we send abroad, with foreign or export, to other coun- countries tries, and for that reason (1) Our export they are called our exports. Our tem leading exports, named in order o value, together with the principa-

In provision for transportation by rail the | countries to which the goods are sent, ar-

PRINCIPAL EXPORTS OF THE UNITED STATES DURING THE FISCAL YEAR ENDED June 30, 1911

	Articles	Value	Principa
1.	Cotton (mainly unmanufactured)	\$626,170,787	United Kingd
2.	Breadstuffs (wheat, corn, flour, etc.)	107,388,698	United Kingde
3.	Meat and dairy products	132,671,336	United Kingde
4.	Iron and steel, and manufactures of	230,725,351	Canada, Mexi
5.	Mineral oils (crude and refined)	98,115,516	United Kingde
	Copper, and manufactures of	104,908,406	Netherlands, (
7.	Wood, and manufactures of	92,255,951	United Kingde
8.	Leather, and manufactures of	55,673,057	United Kingdo
9.	Tobacco, and manufactures of	43,638,904	Canada, Mexi
	Coal	45,013,436	United Kingde
	Total value of exports (merchandise)	\$1,536,561,442	

7,508,082 4.301.421 2,021,103

Fig. 562. — The six countries having the largest merchant marine (1910).

al Countries to which they are sent lom, Germany, France, Italy. lom, Germany, Belgium, Netherlands. lom, Germany, Belgium, France. ico, Japan, United Kingdom. lom, Germany, China, Netherlands. Germany, United Kingdom, France. lom, Canada, Mexico, Argentina. lom, West Indies, Mexico, Canada. ico, West Indies. lom, Italy, Germany, France.

> Name from memory our principal exports in the orde of their value.

While there is thus an enor mous quantity of goods tha we sell to other countries, w must also buy many othe things. One of these is coffe as shown in Figure 542;

produce far less sugar each year than we consume; we depend wholly on foreign nations for raw silk (Fig. (2) Our imports 549); our tea comes almost entirely from abroad (Fig. 543); and while much rice is produced in our Southern States, a large amount has to be purchased. | from which they come, are as follows: -

These goods, and many others, have to be brought to our shores, or imported, from other countries, and for that reason they are called our imports.

Our ten leading imports, named in order of value, together with the principal countries

PRINCIPAL IMPORTS OF THE UNITED STATES DURING THE FISCAL YEAR ENDED June 30, 1911

	Articles	Value	Some of the Principal Countries from which they come
1.	Silk, and manufactures of	\$ 106,824,058	Japan, France, Italy, China,
2.	Fibers, and manufactures of	85,578,249	Mexico, East Indies, Philippines.
3.	Sugar	96,691,096	('uba, East Indies, Germany (beet sugar).
4.	Chemicals, drugs, and dyes	95,101,006	Germany, United Kingdom, France.
5.	Cotton, and manufactures of	91,772,871	United Kingdom, Germany, France, Switzerland.
6.	Coffee	90,567,788	Brazil, Cent. America, Venezuela, Colombia, Mexico.
7.	Hides and skins	70,504,980	East Indies, United Kingdom, Russia, Argentina, Mexico.
8.	Wood, and manufactures of	52,931,803	Canada, Sweden, Germany.
9.	Wool, and manufactures of	41,797,796	United Kingdom, Australia, France, Germany.
10.	India rubber and gutta-percha	92,910,513	Brazil, Mexico.
	Total value of imports (merchandise)	\$ 824,620,160	•

Compare the value and nature of our exports and imports. How is the result endother countries given in the table below?

THE TEN LEADING COUNTRIES WITH WHICH WE TRADE Value for Year ended June 80, 1911 Some of the Principal Exports and Imports Countries

	4 • • • • • • • • • • • • • • • • • • •	June	90, 1911	
1.	United Kingdom	Exports Imports Total	\$576,013,974 261,280,106 837,903,080	Cotton, breadstuffs, meat and dairy products, mineral oil. Cotton goods, wool and woolen goods, tin, manufactured fibers.
2.	Germany	Exports Imports Total	287,495,814 163,242,500 450,738,374	Cotton, breadstuffs, meat and dairy products, copper, mineral oils. Chemicals and drugs, beet sugar, toys, cotton goods, paper, silk goods.
8.	Canada	Exports Imports Total	269,806,013 100,863,418 270,669,431	Iron manufactures, coal, cotton goods. Lumber, wood pulp, fish, copper, hides.
4.	France	Exports Imports Total	135,271,648 115,414,784 250,686,432	Cotton, copper, mineral oils, tobacco. Silk goods, woolen goods, cotton goods, wines.
5.	Cuba.	Exports Imports Total	60,709,062 110,309,468 171,018,530	Breadstuffs, machinery, cotton goods, leather goods, meat and dairy products. Sugar, tobacco, iron ore, fruits.
6.	Netherlands	Exports Imports Total	96,103,376 32,926,492 129,029,868	Breadstuffs, meat and dairy products, copper, mineral oils. Tobacco, diamonds
7.	Brazil	Exports Imports Total	27,240,146 100,867,184 128,107,330	Machinery, breadstuffs, mineral oils, scientific instruments. Coffee, rubber, cocoa, hides.
8.	Mexico	Exports Imports Total	61,281,715 57,450,111 118,731,826	Iron goods, leather goods, coal. Fibers, copper, lead ore, coffee, hides.
9.	Japan	Exports Imports Total	36,721,409 78,527,496 115,248,905	Cotton, machinery, mineral oils, beradstuffs. Silk, tea, rice.
10.	Italy	Exports Imports Total	60,580,766 47,334,809 107,915,575	Cotton, tobacco, breadstuffs. Silk, fruits, olive oil.

More than one third of all our foreign trade is, as you can see, with the British Isles.

Figure 563 shows the ocean routes that vessels engaged in the commerce between

8. Principal nations generally take between the United States and Europe. To what European countries do they extend?

Trace other routes across the Atlantic, and tell what countries they connect. Name some goods that are carried in each case, if you can. Do the same for the Pacific.

Our many exports and imports show how dependent we are upon other countries. We are wonderfully

4. The dependence of nations upon one another

favored in the abundance of our resources. Yet it would be of no use to produce so many things if foreign countries did not buy some of them.

Again, although we have so many products, there are still many things that we need from other lands. It is true that we probably could

Compare our wealth with that of other leading countries.

The figures and diagrams that you have studied show that several European countries compete actively with the

United States in the world's trade. Give examples.

So far as the future is con- in the future cerned, however, several im- 1 and 2. Our portant facts are in our favor. youthfulness In the first place, we are still in our youth as a people, while some of the leading nations of Europeans, perhaps, already reached the height of their power. In the second place, the territory of most of those countries in

densely settled, as shown in Figure 534 Note the number of inhabitants per squar mile in Belgium, Germany, and France When we contrast with these figures ou average of only thirty persons per squar mile, our possible future growth seem

limit. In mense tracts in land, which is made Europe woul do be carefull y tilled, are in our results.

almost without

we promise

great progress

even cleared f

United States

British Isles France Germany Russia Hungary

80,000 65,000 60,500 40,000 25,000

Fig. 564. — The six wealthiest nations of the world (1910).

depend upon ourselves for all that we want better than any other nation. The English, for instance, would starve within a few weeks, if no food were imported there. Yet note the things that we import. How do they compare, in value, with our exports? Thus, in spite of our great resources, we are really very dependent upon other countries.

Owing to our trade relations with the United Kingdom, what hardships would probably be brought upon the British if they entered upon a war with us? How might the Germans suffer if they were at war with us? How might the French suffer? On the other hand, what hardships would come to us in each case?

All the preceding facts prepare us for Wealth of Figure 564, which shows that the United States is the wealthiest nation on the face of the earth.

pasture. In no large section of the Unite States do we even approach the careful tillage of the soil by hand that is common imbelgium and some other European countries.

The varied climate and surface feature of our vast country are also favorable tus; for they guarantee a variety of products. Almost all of climate and farm products can be easily surface feature raised, and our wonderful mineral resources are, so far as we know, not equaled on any continent. It will therefore be seen that our natural resources, which have been so important in giving us our present position, promise equally well for the future.

The character of our people is another thing that must be considered in reckon ing

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our future promise. The condition of China shows that resources alone will not make an energetic people and a great nation; for, in spite of the fact that they have been greatly favored in their resources, they have made very little use of them. Indeed, their customs have even prevented progress (p. 363).

Our people have consisted, in large part, of persons who had energy and ambition emough to migrate to a new land in the hope of bettering their condition. In their new home the opportunities have been so great that they have been encouraged to work and to improve themselves. The conditions in the desert have produced the nomad; the ease of life in the tropical forest the shiftless savage; but the conditions in the United States have produced a race noted for its energy and enterprise. This race has been possible, however, largely because it comes from a mixture of peoples already gifted.

The statement of reasons for expecting great future progress in the United States would not be complete, if left 5 and 6. Our here. There are two other care for edufactors of great importance; cation, and our namely, education and government. Where people are ignorant, and where rulers hamper them by bad laws and heavy taxes, there is little chance of progress. It is those European countries in which there are the best opportunities for education, and the greatest freedom, that have made the greatest progress.

No nation in the world pays more attention to education or guarantees its people a more active part in their government than the United States. These facts, even as fully as the resources and the character of the people, help to explain our astonishing progress in the past, and to give reason for hope in the future.



APPENDIX

REFERENCES TO BOOKS AND ARTICLES

KEY TO ABBREVIATIONS

PUBLISHING HOUSES. — American Book Co., New York (A.B.C.); D. Appleton & Co., New York (App.); The Century Co., New York (Cent.); Doubleday, Page & Co., New York (Doub.); E. P. Dutton & Co., New York (Dutt.); Educational Publishing Co., Boston (E.P.C.); The Ginn Co., Boston (Ginn); Harper & Bros., New York (H.B.); Houghton Mifflin Co. Boston (H.M.C.). I. B. Boston (Ginn); Harper & Bros., New York (H.B.); Houghton, Mifflin Co., Boston (H.M.C.); J. B. Lippincott Co., Philadelphia (Lipp.); Longmans, Green & Co., New York (L.G.); The Macmillan Co., New York (McM.); G. P. Putnam's Sons, New York (Put.); Rand, McNally & Co., Chicago (R.McN.); Charles Scribner's Sons, New York (Scrib.); Silver, Burdett & Co., New York (S.B.C.).

MAGAZINES. — Publications of the Bureau of American Republics, Washington, D.C. (B. Amer. R.); Journal of School Geography, until 1902 (J.S.G.), beginning 1902, Journal of Geography (J.G., \$0.15 a number, \$1.00 a year; Madison, Wis.); National Geographic Magazine (\$0.25 a number, \$2.50 a year; including membership to Society), Washington, D.C. (N.G.M.).

GENERAL. - Many of the references in the First Book would serve for this volume also. It is not, of course, expected that schools will find it possible to obtain all or even a large proportion of those mentioned. These lists, which could easily be multiplied to many times their present size, are offered merely as suggestions to aid those teachers who wish to have a good working library. Many good books are omitted from them, either because of their cost or for other reasons. At the end of each section of Mill's "International Geog-Taphy" are references to good standard books. See also Mill, "Hints to Teachers and Students on the Choice of Geographical Books" (Longmans, Green & Co., New York, \$1.25).

Among the many valuable but expensive books

of reference mention may be made of Réclus, "The Earth and its Inhabitants" (App., 19 vols., 35.00 each); Stanford, "Compendiums of Geography" (Scrib., 10 vols., \$5.50 each); and Baecleker, "Guide Books" (Scrib., prices variable). The latter may be found in the libraries of friends

who have traveled abroad.

There are a number of series for young people which contain good material. For example,
Butterworth, "Zigzag Journey Series" (Dana
Estes & Co., Boston, 18 vols., \$1.50 each); Car
of the Department of Agriculture upon such sub-

penter, "Geographical Readers" (A.B.C., 6 vols., \$0.60 each); Carroll, "Around the World Series" (S.B.C., 6 vols., \$0.60 each); Chamberlain, "Home (S.B.C., 6 vols., \$0.60 each); Chamberlain, "Home and World Series" (McM., 4 vols., \$0.40 each); Champney, "Three Vassar Girls Series" (Dana Estes & Co., Boston, 11 vols., \$0.75 each); Hale, "Family Flight Series" (Lothrop Pub. Co., Boston, 5 vols., \$1.50 each); "Highways and Byways Series" (McM., 30 vols., \$2.00 each); Knox, "Boy Traveler Series" (H.B., 15 vols., \$2.00 each); "Peeps at Many Lands Series" (McM., 30 vols., \$0.75 each); Pratt, "People and Places, Here and There" (E.P.C., 5 vols., \$0.40 each); "List of Books of Travel in European Countries" "List of Books of Travel in European Countries"

(J.G., Dec., '07: 173).

Every teacher of geography would find Mill's "International Geography" (App., \$3.50) and "The Statesman's Year Book" (McM., \$3.00) of inestimable value. For physiography and climate see Tarr, "New Physical Geography" (McM., \$1.00). Every teacher ought to have access to at least one of the geographical magazines, and the subscription price is so low that they are accessible to all. Notice how frequently the National Geographical Magazine and the Journal of Geography are referred to in the following lists. Many articles of timely interest appear in World's Work, Harper's, Scribner's, and other magazines.

GOVERNMENT PUBLICATIONS. — Almost no reference is made to the many government publications of geographic interest. There are far too many for so brief a list. For instance, the Smithsonian Institution Annual Report usually contains articles on geographic subjects, and the Fish Commission has published many excellent accounts of the different fishing industries. From the Weather Bureau are issued not merely weather maps, but Annual Reports and Monthly Weather Reviews.

Among the publications of the Geological Survey are reports upon Irrigation, Annual Reports containing many excellent accounts of the geology of interesting regions, especially mining regions, and also Annual Reports of the Mineral Resources of the country, with statistics. Besides these, the Geological Survey issues topographic maps (five cents each). A list of these maps can be obtained upon application, and the teacher may find a map of the region where the school is situated.

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jects as farming, various crops, forestry, botany, mammals, irrigation, etc. Special reports of importance are issued by the Treasury Department, which also issues Statistical Abstracts on commerce, finance, population, etc. From the State Department, besides valuable special papers (like the Report of the Philippine Commission), are issued the Consular Reports, which have articles and notes upon foreign industries, etc. A wealth of geographical information is contained in the various Census volumes. Besides these, there are other reports, as that on the Precious Metals, issued annually by the Director of the Mint, the Report of the Bureau of Ethnology, and the Report of the Commissioner on Indian Affairs. The maps of the United States Coast Survey will be found of value, especially in those schools located on the coast, which should certainly have maps of their immediate locality. Many states also issue valuable reports on agriculture, mining, manufacturing, etc.

In order to find out about the government publications, one can often obtain a list of those issued by a given bureau by writing to the Superintendent of Public Documents, Washington, D.C. A monthly list of all government publications is also prepared by the Superintendent of Public Documents, thus permitting one to keep track of new publications. Some of the publications must be purchased, but many may be obtained by writing to one's congressman or senator, to whom copies are given for free distribution among constituents. The great majority of government documents are issued for free distribution. Applications for these, in moderation, are invariably granted when needed for schools, provided the

quota is not already exhausted.

GENERAL. — Adams, "Text-book of Commercial Geography" (App., \$1.30); Allen, "Children of the Palm Lands" (E.P.C., \$0.50); American cial Geography" (App., \$1.50); American of the Palm Lands" (E.P.C., \$0.50); American Commonwealth Series (volume for each state, H.M.C., \$1.25 each); Ballou, "Footprints of Travel" (Ginn, \$1.00); Bartholomew, "The Handy Reference Atlas of the World" (Dutt., \$2.50); Brigham, "Geographic Influence in American History" (Ginn, \$1.25); Brooks, "Century Book for Young Americans" (Cent., \$1.50); Carpenter, "How the World is Fed" (A.B.C., \$0.60); Carpenter, "Geographical Readers" (one for each continent, A.B.C., \$0.60 to \$0.70 each); Chase and Clow, "Stories of Industry" (E.P.C., 2 vols., \$0.40 each); Colquhoun, "The Mastery of the Pacific" (McM., \$3.00); Gannett, "Commercial Geography" (A.B.C., \$1.00); Geikie, "The Teaching of Geography" (McM., \$0.60); George, "Relations of Geography and History" (Oxford University Press, New York, \$1.10); Hammond, "Handy Atlas of the World" (C. S. Hammond Co., New York, \$1.00); Herbertson, "Descriptive Geographies from Original Sources" "Descriptive Geographies from Original Sources" (for each continent, McM., \$0.70 to \$0.90 each); Herbertson, "Man and His Work" (McM., \$0.60);

Hurlburt, "Stories about Children of All Nat (J. C. Winston Co., Philadelphia, \$0.75); Jol "Mathematical Geography" (A.B.C., \$1.00); "Picturesque Geographical Readers" (L. Shepard, Boston, Vol. 2, \$0.72, Vols. 3, 4, 4 each \$0.56); Kirkham, "In the Open" (P. & Co., San Francisco, \$1.75); Lummis, "Strange Corners of Our Continent" (Cent., \$Lyde, "A School Text-book of Geography" (McM., \$1.00); Lyde, "Geographies of the V. Continents" (McM., \$0.50 to \$1.40); Lyde, and his Markets" (McM., \$0.50); McM. "Special Method in Geography" (McM., \$McMurry, "Teacher's Manual of Geography" (McM., \$0.40); Morris, "Home Life in All L. (Lipp., \$1.00); Réclus, "The Earth and i habitants," Vols. XV, XVI, and XVII (\$5.00 each); Reynolds, "World Pictures" (\$0.70); Rocheleau, "The Geography of Com and Industry" (E.P.C., \$1.00); Roch "Great American Industries" (C. A. Flar Chicago, 2 vols., \$0.50 each); Shaler, "Ma the Earth" (Ginn, \$1.50); Smith, "Our Country" (S.B.C., \$0.50); Stanford, "Cot dium of Geography and Travel," North Am Vol. 1, "Canada" by Dawson: Vol. 2. "I Hurlburt, "Stories about Children of All Nat Country" (S.B.C., \$0.50); Stanford, "Condium of Geography and Travel," North Am Vol. 1, "Canada" by Dawson; Vol. 2, "I States" by Gannett (Scrib., \$5.50 each); Tai McMurry, "Five Book Series" (McM., \$0. \$0.75 each); Toothaker, "Commercial Materials" (Ginn, \$1.25); Trotter, "Geog of Commerce" (McM., \$1.10); Austin, "Methods of Travel" (N.G.M., Nov., '07: Fay, "The World's Highest Altitudes" (N. June, '09: 493); Mill, "The Development of itable Lands" (J.S.G., May, '00: 161; and '00: 218). '00: 218).

NORTH AMERICA. — Carpenter, "Geogra] Reader of North America" (A.B.C., \$0.60); bertson, "Descriptive Geography: North ica" (McM., \$0.75); Hurlburt, "Historic Higl of North America" (A. H. Clark Co., Cleve \$2.50); McMurry, "Excursions and Lesso Home Geography" (McM., \$0.50); McM "Larger Types of American Geography" (I \$0.75); Pratt, "American History Sta (E.P.C., 4 vols., \$0.36 each); Reynolds, Americas" (McM., \$0.75); Russell, "I America" (App., \$2.50); Russell, "Glacie North America" (Ginn, \$1.75); Russell, "I of North America" (Ginn, \$1.50); Russell, "I of North America" (Put., \$2.00); Semple, "I ican History and its Geographic Condit (H.M.C., \$1.25).

The United States. General. — Authorica" (McM.

United STATES. GENERAL. "America's Economic Supremacy" (McM., \$
Adams, "The New Empire" (McM., \$ Adams, "The New Empire" (McM., \$
Austin, "Steps in the Expansion of our Terri
(App., \$1.25); Baedeker, "The United St
(Scrib., \$3.60); Brigham, "Geographic Influin American History" (Ginn, \$1.25); Bi
"Century Book of American Colonies" (
\$1.50); Brooks, "First across the Conti (Scrib., \$1.50); Bryce, "American Commonwealth" (McM., \$4.00; abridged edition, \$1.75); Channing, "Students' History of the United States" (McM., \$1.40); Fiske, "How the United States became a Great Nation" (Ginn, \$1.25); Gannett, "The Building of a Nation" (H. T. Thomas Co., New York, \$2.50); Hale, "Tarry at Home Travels" (McM., \$2.50); King, "Handbook of the United States" (Moses King Corporation, New York, \$2.50); MacCoun, "An Historical Geography of the United States" (Townsend MacCoun, New York, \$1.00); McMurry, "Type Studies from Geography of the United States" (McM., \$0.50); Newell, "Irrigation in the United States" (Crowell & Co., New York, \$2.00); "Our Country" (U. L. Mason, New York, \$0.50); Patton, "The Natural Resources of the United States" (App., \$3.00); Ries, "Economic Geology of the United States" (McM., \$2.00); Shaw, "Uncle Sam and His Children" (A. S. Barnes Co., New York, \$1.20); Smith, "Our Own Country" (S.B.C., \$0.50); Smith, "The Story of Iron and Steel" (App., \$0.75); Stevenson, "Across the Plains" (Scrib., \$1.25); Stoddard, "Beautiful Scenes of America" (Saalfield Pub. Co., Akron, O., \$0.75); Tarr, "Economic Geology of the United States" (McM., \$3.50); "The Story of Paper Making" (Butler Paper Co., Chicago, \$1.25); Whitney, "The United States" (Little, Brown & Co., Boston, \$2.00); Young, "The Cotton Industry" (Scrib., \$0.75); Adams, "The United States: Land and Water" (N.G.M., May, '03: 171); Austin, "The United States: Her Industries" (N.G.M., Aug., '03: 301); Kirchhoff, "The United States: Her Mineral Resources" (N.G.M., Sept., '98: 377); Wiley, "The United States: Its Soils and Their Products" (N.G.M., July, '03: 261); Brown, "Seaports in the United States" (J.G., Oct., '05: \$37); Emerson, "A Glimpse of Steel Manufacture" (J.G., April, '03: 169).

United States: Her Mineral Resources" (N.G.M., Sept., '03: 331); Price, "The Influence of Forestry upon the Lumber Industry of the United States" (N.G.M., Oct., '03: 381); "The Growth of the United States" (N.G.M., Oct., '03: 381); "The Growth of the United States" (N.G.M., Sept., '98: 377); Wiley, "The United States: Its Soils and Their Products" (N.G.M., July, '03: 261); Brown, "Seaports in the United States" (J.G., Oct., '05: 337); Emerson, "A Glimpse of Steel Manufacture" (J.G., April, '03: 169).

New England. — Bacon, "Historic Pilgrimages in New England" (S.B.C., \$1.50); Davis, "Physical Geography of Southern New England" (A.B.C., \$0.20); Drake, "Nooks and Corners of the New England Coast" (H.B., \$2.50); Emerson, "New England States" (McM., \$0.30); Johnson, "New England and its Neighbors" (McM., \$2.00); Kimball, "Vermont for Young Vermonters" (App., \$1.50); Thoreau, "Maine Woods" (H.M.C., \$1.50); Barton, "General Geographic Features in and around Boston" (J.G., June, '03: 277); Dodge, "Approaching Boston" (J.G., June, '03: 327); CJ.G., June, '03: 315); Gulliver, "Geographical Development of Boston" (J.G., June, '03: 323); "Geographical Notes on Boston" (J.G., June, '03: 323); "Geographical Notes on Boston and Vicinity (J.G.,

June, '03: 333); King, "Excursions in and around Boston" (J.G., June, '03: 286); Shurtleff, "Boston Parks" (J.G., June, '03: 302).

ton Parks" (J.G., June, '03: 302).

MIDDLE ATLANTIC STATES. — Brigham, "From Trail to Railway through the Appalachians" (Ginn, \$0.50); Chandler & Foushee, "Virginia" (McM., \$0.30); Gilbert, "Niagara Falls and their History" (A.B.C., \$0.20); Rupert, "Pennsylvania" (McM., \$0.30); Southworth, "Story of the Empire State" (App., \$0.75); Twitchell, "Maryland" (McM., \$0.30); Whitbeck, "New Jersey" (McM., \$0.30); Whitbeck, "New York" (McM., \$0.30); Brigham, "The Eastern Gateway of the United States" (J.S.G., April, '00: 127); Dietz, "The Fall Line" (J.G., June, '05: 244).

Southern States. — Barrett, "Tennessee"

SOUTHERN STATES. — Barrett, "Tennessee" (McM., \$0.30); Brook, "Cotton: Its Uses, Culture, etc." (Spon & Chamberlain, New York, \$3.00); Burkett, "Cotton" (Doub., \$2.00); Earle, "Southern Agriculture" (McM., \$1.25); Faust and Allen, "North Carolina" (McM., \$0.30); Hayes, "The Southern Appalachians" (A.B.C., \$0.20); Hitchcock, "Louisiana Purchase" (Ginn, \$1.25); Hohn, "Cotton Mills in South Carolina" (A. Kohn, Charleston, S.C., \$1.00); Littlejohn, "Texas" (McM., \$0.35); Mitchell, "Georgia Land and People" (F. L. Mitchell, Atlanta, Ga., \$1.25); Ralph, "Dixie, or Southern Scenes and Sketches" (H.B., \$2.50); Smith, "Water Resources of Alabama" (E. A. Smith, University of Alabama, Gratis); Taylor and Stephen, "Louisiana" (McM., \$0.25); Thompson, "From Cotton Field to the Cotton Mill" (McM., \$1.50); Willoughby, "Across the Everglades" (Lipp., \$1.50); Harrison, "Cultivation of Rice in the United States" (J.G., Sept., '03: 369); Lloyd, "The Delta of the Mississippi" (J.G., May, '04: 204); Phillips, "How the Mangrove Tree adds New Land to Florida" (J.G., Jan., '03: 10); Series of papers on the Geography of the Louisiana Purchase (J.G., June, '04: 243-278); "The Mississippi River" (J.G., Oct., '02: 374).

Oct., '02: 374).

Central States. — Bender, "Iowa" (McM., \$0.20); Barnard, "Missouri" (McM., \$0.30); Condra, "Geography of Nebraska" (University Pub. Co., Lincoln, Neb., \$0.90); Cooley, "Michigan" (H.M.C., \$1.10); Darling, "Illinois" (McM., \$0.30); Dryer, "Studies in Indiana Geography" (Inland Pub. Co., Indianapolis, Ind., \$0.50); Fox, "Out Doors in Old Kentucky" (Scrib., \$1.75); Grinnell, "Jack, the Young Explorer" (F. A. Stokes, New York, \$1.25); Hall, "Geography of Minnesota" (H. W. Nelson Co., Minneapolis, Minn., \$1.20); Hovey, "Celebrated American Caverns" (B. Clarke Co., Cincinnati, O., \$2.00); Stanchfield, "Lumbering in Minnesota" (D. Stanchfield, Minneapolis, Minn., \$1.00); Thwaites, "Down Historic Waterways," "On the Storied Ohio" (McClurg, Chicago, \$1.20 each); Willard, "Story of the Prairies" (R.McN., \$1.75); Wilson, "Ohio" (McM., \$0.30); Winans, "Kansas" (McM., \$0.30); Hall, "Minnesota, a Sketch" (J.G., June, \$0.30); Hall, "Minnesota, a Sketc

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'02: 241); Hall, "Minneapolis and its Environs" (J.G., June, '02: 249).

Western States. — Austin, "The Land of Little Rain" (H.M.C., \$2.00); Brooks, "First across the Continent" (Scrib., \$1.50); Brown, "The Glory Seekers" (McClurg, Chicago, \$1.50); Clark, "Indians of the Yosemite Valley and Vicinity" (G. Clark, Yosemite Valley, Cal., \$1.00); Cody, "True Tales of the Plains" (Cupples & Leon, New York, \$1.00); Fairbanks, "California" (McM., \$0.30); Fultz, "Out of Door Studies in Geography" (Public Schools Pub. Co., Bloomington, Ill., \$0.60); Grohman, "Camps in the Rockies" (Scrib., \$1.25); Hewitt, "Across the Plain and over the Divide" (Broadway Pub. Co., New York, \$1.50); Irish, "Arizona" (McM., \$0.20); Jones, "Utah" (McM., \$0.40); Jordon, "California and the Californians" (A. H. Robertson, San Francisco, Cal., \$0.75); Murk. "Our National fornia and the Californians" (A. H. Robertson, San Francisco, Cal., \$0.75); Muir, "Our National Parks" (H.M.C., \$1.75); Munk, "Arizona Sketches" (Grafton Press, New York, \$2.00); Paine, "Greater America" (Outing, New York, \$1.50); Parkman, "The Oregon Trail" (Little, \$1.50); Parkman, "The Oregon Trail" (Little, Brown & Co., Boston, \$2.00); Prudden, "On the Great American Plateau" (Put., \$1.50); Ralph, "Our Great West" (H.B., \$2.50); "The Pacific Coast Guide Book" (R.McN., \$1.00); Tonge, "Handbook of Colorado Resources" (T. Tonge, Denver, Col., \$0.50); Van Dyke, "The Desert" (Scrib., \$1.25); "Washington" (McM., \$0.20); Barrows, "The Colorado Desert" (N.G.M., '00: 337); Blanchard. "Home Making by the Govern-337); Blanchard, "Home Making by the Government" (N.G.M., April, '08: 250); Blanchard, "Millions for Moisture" (N.G.M., April, '07: 217); Chapman, "Deserts of Nevada and the Death Valley" (N.G.M., Sept., '06: 483); Chapman, "Our Northern Rockies" (N.G.M., Oct., '02: 361); McGee, "The Yuma Trail" (N.G.M., April, '01: 103); Newell, "The Reclamation of the West" (N.G.M., Jan., '04: 15); Ransome, "The San Francisco Earthquake" (N.G.M., May, '06: 280); Rody, "Arizona and New Mexico" (N.G.M., '06: 101); "The Redwood Forest of the Pacific Coast" (N.G.M., May, '99: 145); Dodge, "Life on the Colorado Plateaus" (J.S.G., Feb., '00: 45); Dodge, "The Big Trees of California" (J.S.G., Jan., '01: 16); Russell, "Climate, Vegetation, and Drainage of Cascade Mountains" (J.S.G., Oct., '01: 280); Lee, "Canyons of Southeastern Colo-Chapman, "Deserts of Nevada and the Death '01: 280); Lee, "Canyons of Southeastern Colorado" (J.G., Oct., '02: 357); Newell, "Irrigation on the Great Plains" ('96 Year Book, Department

of Agriculture, Washington, D.C., p. 197).

ALASKA. — Burroughs, "Far and Near" (H.M.C., \$1.10); De Windt, "Through the Gold Fields of Alaska to Bering Strait" (H.B., \$2.50); Fields of Alaska to Bering Strait" (H.B., \$2.50); Edwards, "Into the Yukon" (R. Clarke Co., Cincinnati, O., \$1.50); Greeley, "Alaska" (Scrib., \$2.00); Higginson, "Alaska, the Great Country" (McM., \$2.50); MacDonald, "The White Trail" (H. M. Caldwell, Boston, \$1.25); Scidmore, "Guidebook to Alaska" (App., \$1.25); Stoddard, "Over Rocky Mountains to Alaska" (B. Herder,

St. Louis, \$0.75); Swineford, "Alaska" (R.McN., \$1.00); Thompson, "Gold Seeking in the Dalton Trail" (Little, Brown Co., Boston, \$1.50); "Alaska" (N.G.M., April, '98: 105, twelve articles); "An Expedition through the Yukon District" (N.G.M., Vol. 2, '92: 117); Brooks, "Geography of Alaska" (N.G.M., May, '04: 213); Gannett, "The General Geography of Alaska" (N.G.M., May, '01: 180); Georgeson, "The Possibilities of Alaska" (N.G.M., March, '02: 81); Grosvenor, "Reindeer in Alaska" (N.G.M., April, '03: 127); "Life on a Yukon Trail" (N.G.M., Oct., '99: 377 and 457); "The Alaskan Boundary" (N.G.M., Nov., '99: 425); Bayley, "The Yukon and its Basin" (J.G., Oct., '08: 25); Brooks, "An Exploration to Mt. McKinley" (J.G., Nov., '03: 441); Davidson, "Glaciers of Alaska" (Geographical Society of the Pacific, San Francisco, Cal.); Brooks, "Geography of Alaska" (United States Geological Survey, Washington).

The Polar Regions. — Baker, "Out of the Northland" (McM., \$0.25); Hayes, "The Land of Desolation" (H.B., \$1.75); Horton, "The Frozen North" (D. C. Heath, Boston, \$0.40); Long, "Northern Trails" (Ginn, \$1.50); Nansen, "First Crossing of Greenland" (L.G., \$1.25); Mrs. Peary, "The Snow Baby" (F. A. Stokes, New York, \$1.30); Mrs. Peary, "Children of the Arctic" (F. A. Stokes, \$1.20); Mrs. Peary, "My Arctic Journal" (Contemporary Pub. Co., New York, \$2.00); Schwatka, "Children of the Cold" (E.P.C., \$1.25); Scott, "From Franklin to Nansen" (Lipp., \$1.25); Scott, "Romance of Polar Exploration" (Lipp., \$1.50); Smith, "Eskimo Stories" (R.McN., \$1.00); "An Ice-wrapped Continent, Antarctica" (N.G.M., Feb., '07: 95); Harris, "Some Indications of Land in the Vicinity of the North Pole" (N.G.M., June, '04: 255); Peary, "The Value of Arctic Exploration" (V.G.M., Dec., '03: 429): "Climatic Control in Greenland" (L.S.G., '125): "Climatic Control in

Pole" (N.G.M., June, '04: 255); Peary, "The Value of Arctic Exploration" (N.G.M., Dec., '03: 429); "Climatic Control in Greenland" (J.S.G., Oct., '00: 281).

429); "Climatic Control in Greenland" (J.S.G., Oct., '00: 281).

West Indies and Bermuda. — Arthur, "Ten Thousand Miles in a Yacht" (Dutt., \$2.00); "Handbooks on Haiti and Santo Domingo" (B. Amer. R., \$0.35 each); Hill, "Cuba and Porto Rico" (Cent., \$3.00); Kennan, "Tragedy of Pelée" (McM., \$1.00); Kingsley, "At Last: A Christmas in the West Indies" (McM., \$1.25); Nicholas, "Around the Caribbean and across Panama" (H. M. Caldwell, Boston, \$2.00); Ober, "Guide to the West Indies and Bermudas" (Dodd, Mead Co., New York, \$2.25); Ober, "Our West Indian Neighbors" (James Pott & Co., \$2.50); Prichard, "Where Black rules White" (Scrib., \$3.00); Rodway, "The West Indies and the Spanish Main" (Put., \$1.75); Stoddard, "Cruising among the Caribbees" (Scrib., \$1.50); "The Foreign Commerce of our Possessions," etc. "Cruising among the Caribbees" (Scrib., \$1.50);
"The Foreign Commerce of our Possessions," etc.
(Treasury Department, Washington); "The
United States and Porto Rico" (L.G., \$1.30);
Chester, "Haiti, a Degenerating Island" (N.G.M.,
March, '08: 200); "Cuba" (N.G.M., Sept., '98:

■93); "Cuba, the Pearl of the Antilles" (N.G.M., Oct., '06: 535); Hill, "Cuba and Porto Rico" (Cent., \$3.00); Hill and Russell, "Volcanic Disturbances in the West Indies" (N.G.M., July, '02: 223); "Porto Rico" (N.G.M., March, '99: 93); Russell, "Volcanic Eruptions on Martinique and St. Vincent" (N.G.M., Dec., '02: 415); Wilcox,

'Among the Mahogany Forests of Cuba" (N.G.M.,

July, '08: 485); Cline, "The Island of Porto Rico"

(J.S.G., Dec., '01: 362); Heilprin, "The Bermuda

Islands" (A. Heilprin, Philadelphia, \$3.50).

HAWAHAN AND SMALL ISLANDS. - Alexander, "A Brief History of the Hawaiian People" (A.B.C., \$1.50); Baldwin, "Geography of the Hawaiian Islands" (A.B.C., \$0.60); Dole, "Hiwa: Tale of Ancient Hawaii" (H.B., \$1.00); "Greatest America; the Latest Acquired Possessions" America; the Latest Acquired Possessions" (Perry Mason Co., Boston, \$0.50); "Report of the Hawaiian Commission" (State Department, Washington); Young, "The Real Hawaii" (Doubleday, New York, \$1.50); Wallace, "Island Life" (McM., \$1.75); Whitney, "Hawaiian America" (H.B., \$2.50); articles on "Samoa" (N.G.M., June, '99:

207).

207).
PHILIPPINE ISLANDS. — Conger, "An Ohio Woman in the Philippines" (Mrs. E. B. Conger, Akron, O., \$2.00); Coulter, "Nature Study Reader for the Philippine Islands" (App., \$0.60); Coursey, "History and Geography of the Philippine Islands" (Educator School Supply Co., Mitchell, S.D., \$0.50); Jernegan, "Philippine Geography" (D. C. Heath, Boston, \$0.60); Knapp, "Story of the Philippines" (S.B.C., \$0.60); Son-Dichsen, "Ten Months a Captive among Filipines" michsen, "Ten Months a Captive among Filipinos" (Jennings & Graham, Cincinnati, \$1.75); Worcester, "The Philippine Islands and their People" (McM., \$2.50); Younghusband, "The Philippines and Round About" (McM., \$2.50); "Report of the Philippine Commission" (State Department, The Philippine Commission" (State Department, Washington); Articles on the Philippines (N.G.M., June, '98: 257-304; Oct., '99: 33-72; Nov., '00: 1); Barrett, "The Philippine Islands and their Environment" (N.G.M., Jan., '00: 1); Cannett, "The Philippine Islands and their People" (N.G.M., March, '04: 71); Papers on Philippines (N.G.M., May, '03); Sanger and Others, "A Revelation of the Filipinos" (N.G.M., April, '05: 139); "The Climate of the Philippine Islands" (J.S.G., Dec., '99: 361).

CANADA. — Ancr, "The North Country" (R. Clarke Co., Cincinnati, \$2.00): Baedeker, "The

Clarke Co., Cincinnati, \$2.00); Baedeker, "The Dominion of Canada" (Scrib., \$1.50); Butler, Wild Northland, a Winter with a Dog" (A. S. Barnes & Co., New York, \$1.00); "Canadian Guide Book" (App. \$1.00); Co. "Our America Video Co. Barnes & Co., New York, \$1.00); "Canadian Guide Book" (App., \$1.00); Coe, "Our American Neighbors" (S.B.C., \$0.60); Hatton and Harvey, "Newfoundland" (Doyle & Whipple, Boston, \$2.50); Howe, "Fourteen Thousand Miles, a Carriage, and Two Women" (F. S. Howe, Leominster, Mass., \$1.50); Morely, "Down North and Up Along" (Dodd, Mead & Co., New York, \$1.50); Parkin, "The Great Dominion" (McM., \$1.75);

Pauli, "Record of a Trip through Canada's Wilderness" (J. A. Pauli & Co., New York, \$1.50); Plummer, "Roy and Ray in Canada" (Henry Holt & Co., New York, \$1.75); Ralph, "On Canada's Frontier" (H.B., \$2.50); Statistical Year Book (each year by Department of Agriculture, Ottawa); "The Relation of the United States and Canada" "The Relation of the United States and Canada" (Senate Reports, No. 1530, Washington); Wallace, "Long Labrador Trail" (Outing, New York, \$1.50); Willcox, "Exploration in the Canadian Rockies" (N.G.M., May, '02: 151; June, '02: 185).

MEXICO. — Baedeker, "The United States" (with an excursion into Mexico; Scrib., \$3.60);

Bancroft, "Resources and Development of Mexico" (The Bancroft Co., San Francisco, \$4.50); Edwards, "On the Mexican Highlands" (Jennings & Graham, Cincinnati, \$1.50); Fitzgerrell, "Guide to Tropical Mexico" (J. J. Fitzgerrell, Mexico City, \$0.50); "Guide to Mexico" (App., \$1.50); to Tropical Mexico" (J. J. Fitzgerrell, Mexico City, \$0.50); "Guide to Mexico" (App., \$1.50); Griffin, "Mexico of To-day" (H.B., \$1.50); Hornaday, "Camp Fires on Desert and Lava" (Scrib., \$3.00); Lummis, "The Awakening of a Nation" (H.B., \$2.50); McGary, "An American Girl in Mexico" (Dodd, Mead & Co., New York, \$1.00); Noll, "Short History of Mexico" (McClurg & Co., Chicago, \$0.75); Plummer, "Roy and Ray in Mexico" (Henry Holt Co., New York, Clurg & Co., Chicago, \$0.75); Plummer, "Roy and Ray in Mexico" (Henry Holt Co., New York, \$1.75); Prescott, "Conquest of Mexico" (A. L. Burt & Co., New York, \$1.25); Romero, "Coffee and India Rubber Culture in Mexico" (Put., \$3.00); Romero, "Geographical and Statistical Notes on Mexico" (Put., \$2.00); Schwatka, "In the Land of Cave and Cliff Dwellers" (E.P.C., \$1.25); Smith, "White Umbrella in Mexico" (H.M.C., \$1.50); Darton, "Mexico, the Treasure House of the World" (N.G.M., Aug., '07: 493); Foster, "The New Mexico" (N.G.M., Jan., '02: 1); Nelson, "A Winter Expedition in Southwestern Mexico" (N.G.M., Sept., '04: 341). Mexico" (N.G.M., Sept., '04: 341).

Mexico" (N.G.M., Sept., '04: 341).

CENTRAL AMERICA AND PANAMA CANAL ZONE.

— Belt, "Naturalist in Nicaragua" (Scrib. and Welford, New York, \$3.00); Calvo, "The Republic of Costa Rica" (R.McN., \$2.00); Charles, "Honduras" (R.McN., \$1.50); Davis, "Three Gringos in Venezuela and Central America" (H.B., \$1.50); Herbertson, "Descriptive Geography, Central South America" (McM. \$0.70); Sheldon "Natas South America" (McM., \$0.70); Sheldon, "Notes on the Nicaragua Canal" (McClurg, Chicago, \$1.25); Stevens, "A Trip to Panama" (Lesan-Gould Co., St. Louis, gratis); Handbooks (B. Amer. R.) on Costa Rica, Honduras, Salvador, and Nicaragua (2026) \$0.25. and Nicaragua (each \$0.35, Guatemala, \$0.25); and Nicaragua (each \$0.35, Guatemala, \$0.25); Monthly Bulletins of the same Bureau (each, \$0.25), also contain information about American Republics; "Across Nicaragua" (N.G.M., Vol. 1, '89: 315); Articles on the Nicaragua Canal (N.G.M., Aug., '99: 297); Burr, "The Republic of Panama" (N.G.M., Feb., '04: 57); "Notes on Panama and Colombia" (N.G.M., Dec., '03: 458); Chester, "The Panama Canal" (N.G.M., Oct., '05: 445 and 467); Thompson, "Henequen—the Yucatan Fibre" (N.G.M., April, '03: 150). Physiography. — Davis, "Elementary Physical Geography" (Ginn, \$1.40); Davis, "Physical Geography" (Ginn, \$1.25); Dodge, "Reader in Physical Geography" (L.G., \$0.70); Geikie, "Elementary Lessons in Physical Geography" (McM., \$1.10); Gilbert and Brigham, "Introduction to Physical Geography" (App., \$1.25); Hutchinson, "Story of the Hills" (McM., \$0.50); Huxley, "Physiography, An Introduction to the Study of Nature" (App., \$2.50); "National Geographic Monographs" (A.B.C., \$2.50); Salisbury, "Physiography for High Schools" (Henry Holt, New York, \$1.50); Shaler, "Aspects of the Earth" (Put., \$2.00); Shaler, "Outlines of the Earth's History" (App., \$1.75); Shaler, "The Story of our Continent" (Ginn, \$1.00); Singleton, "Great Rivers of the World" (Dodd, Mead & Co., New York, \$1.60); Tarr, "Elementary Geology" (McM., \$1.40); Tarr, "Elementary Physical Geography" (McM., \$1.40; contains references to works on Physiography); Tarr, "New Physical Geography" (McM., \$1.00); Emerson, "Floodplains in their Relation to Life" (J.G., Jan., '07: 16).

OCEAN, CLIMATE, etc. — Darwin, "Tides" (H.M.C., \$2.00); Guyot, "The Earth and Man" (Scrib., \$1.75); Harrington, "About the Weather" (App., \$0.65); Henry, "Climatology of the United States" (Government Printing Office); Ingersoll, "Book of the Ocean" (Cent., \$1.50); Jackson, "Astronomical Geography" (D. C. Heath, Boston, \$0.40); Pillsbury, "The Gulf Stream" (U.S. Coast Survey, Washington); Shaler, "Sea and Land" (Scrib., \$2.50); Smith, "The Organization of Ocean Commerce" (Ginn, \$1.25); Ward, "Climate" (Put., \$2.00); "The Arid Regions of the United States" (N.G.M., March, '94: 167).

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Animals, Plants, etc. — Bailey, "The Nature Study Idea" (McM., \$1.00); Buckham, "Afield with the Seasons" (Crowell Pub. Co., New York, \$1.25); Burroughs, "Afoot and Afloat" (H.M.C., \$0.25); Burroughs, "Ways of Nature" (H.M.C., \$1.10); Cook, "Along Four-footed Trails" (James Pott & Co., New York, \$1.50); Du Chaillu, "In African Forest and Jungle" (Scrib., \$1.50); Foster, "In the Forest" (Doub., \$1.50); Heilprin, "The Geographical and Geological Distribution of Animals" (App., \$2.00); Hulburt, "Forest Neighbors" (McClure, Phillips & Co., New York, \$1.50); Hyrst, "Adventures among Wild Beasts" (Lipp., \$1.50); Ingersoll, "Wild Neighbors" (McM., \$1.50); Ingersoll, "Wild Neighbors" (McM., \$1.50); Ingersoll, "Wild Life of Orchard and Field" (H.B., \$1.40); Ingersoll, "Wit of the Wild" (Dodd, Mead & Co., New York, \$1.20); Johnson, "Home, Haunts, and Habits of Wild Animals" (J. C. Winston Co., Philadelphia, \$1.50); Lucas, "Animals before Man in America" (App., \$1.25); Mill, "Realm of Nature" (Scrib., \$1.50); Roosevelt, "Hurting Trips of a Ranchman" (Put., \$3.00); Scharf, "European Animals" (Dutt., \$2.50); Shaler, "Domesticated Animals" (Scrib., \$2.50);

Shaler, "Man and the Earth" (R. K. Fox, New York, \$1.50); Shaler, "Nature and Man in America" (Scrib., \$1.50); Stoneman, "Plants and their Ways in South Africa" (L.G., \$1.10); Walsh, "Coffee, its History, Classification, and Description"; "Tea, its History and Industry" (Coates & Co., Philadelphia, \$2.00 each); Whitney, "On Snow Shoes to the Barren Grounds" (H.B., \$3.50); Wright, "Four-footed Americans" (McM., \$1.50); Fairchild, "Our Plant Immigrants" (N.G.M., April, '06: 179); Henshaw, "The Policemen of the Air" (N.G.M., Feb., '08: 79); Shires, "One Season's Game Bag with the Camera" (N.G.M., June, '08: 387); Smith, "Our Fish Immigrants"; other articles on Fish and Turtles (N.G.M., June, '07: 385, 400, 413); Warren, "Animal Wealth of the United States" (N.G.M., Sept., '06: 511); Holdsworth, "Animal Industries" (J.S.G., March, '00: 105; April, '00: 146).

South America. — There is a handbook for each of the republics, issued by the Bureau of American Republics, Washington, D.C., price from \$0.30 to \$0.50 each. Andrews, "Brazil, its Conditions and Prospects" (App., \$1.50); Ballou, "Equatorial America" (H.M.C., \$1.50); Bates, "A Naturalist on the River Amazon" (Humbolt Library, New York, \$1.00); Butterworth, "South America and Panama" (Doub., \$1.00); Carpenter, "Geographical Reader, South America, Social, Industrial, and Political" (Saalfield Pub. Co., Akron, O., \$3.00); Childs, "South American Republics" (H.B., \$3.50); Clairmont, "A Guide to Modern Peru" (A. de Clairmont, Toledo, O.); Conway, "The Bolivian Andes" (H.B., \$3.00); Curtis, "Between the Andes and the Ocean" (H. S. Stone, Chicago, \$2.50); Curtis, "Capitols of Spanish America" (H.B., \$3.50); Curtis, "Chili" (Scrib., \$3.00); Ford, "Tropical America" (Scrib., \$2.00); Hale, "The South Americans" (Bobbs-Merrill Co., Indianapolis, \$2.50); Herbertson, "Descriptive Geography, Central and South America" (McM., \$0.70); Pepper, "Panama to Patagonia" (McClurg, Chicago, \$2.50); Pérez Triana, "Down the Orinoco in a Canoe" (Crowell & Co., New York, \$1.25); Pratt, "Pizarro: Conquest of Peru" (E.P.C., \$0.30); Reynolds, "The Guiana Wilds" (L. C. Page & Co., Boston, \$1.25); Ruhl, "Other Americans" (Scrib., \$2.00); Scruggs, "Columbian and Venezuelan Republics" (Little, Brown & Co., Boston, \$2.50); Smith, "Temperate Chili" (McM., \$3.50); Whymer, "Travels amongst the Great Andes of the Equator" (Scrib., \$2.50); Adams, "Cuzco: America's Ancient Mecca" (N.G.M., Oct., '08: 669); "A Journey in Ecuador" (N.G.M., July, '96: 238); "A Winter Voyage through the Straits of Magellan" (N.G.M., May, '97: 129); Calderon, "Peru, its Resources, De-

velopment, and Future" (N.G.M., Aug., '04: 311); Curtis, "The Road to Bolivia" (N.G.M., June, '00: 209; July, '00: 264); Hatcher, "Some Geographic Features of Southern Patagonia" (N.G.M., Feb., '00: 41); Lee, "Beautiful Ecuador" (N.G.M., Feb., '00: 41); Lee, "Beautiful Ecuador" (N.G.M., Feb., '07: 81); Pepper, "South America Fifty Years Hence," and other articles on South America (N.G.M., Aug., '06: 427, 432, 449, 453, 456); "Patagonia" (N.G.M., Nov., '97: 305); Root, "An Awakened Continent to the South of Us" (N.G.M., Jan., '07: 61); President Hubbard's Annual Address, "South America" (N.G.M., March, '91: 1); "Venezuela, her Government," etc. (N.G.M., Feb., '96: 49); "A Day in the Falkland Islands" (J.S.G., Feb., '98: 49); "Climatic Notes made during a Voyage around South America" (J.S.G., Sept. and Oct., '98: 241 and 297); "From Paros to Manaos" (J.S.G., April, '01: 121); Johnson, "Trade and Industries of Western South America" (J.G., Jan., '02: 25; Feb., '02: 51; March, '02: 109); "The Climatic Control of Occupation in Chile" (J.S.G., Dec., '97: 289); "The Valley of the Amazon and its Development" (J.S.G., Sept., '97: 193).

Europe. — Amicis, "Holland and its People" (Put., \$2.00); Bailey, "First Impressions of Europe" (Grafton Press, New York, \$1.25); Beckman, "Backsheesh; Travels in Europe, Asia Minor, etc." (Whitaker & Ray, San Francisco, \$1.50); Belloe, "Hills and the Sea" (Scrib., \$1.50); Bröchner, "Danish Life in Town and Country"

EUROPE. — Amicis, "Holland and its People" (Put., \$2.00); Bailey, "First Impressions of Europe" (Grafton Press, New York, \$1.25); Beckman, "Backsheesh; Travels in Europe, Asia Minor, etc." (Whitaker & Ray, San Francisco, \$1.50); Belloe, "Hills and the Sea" (Scrib., \$1.50); Bröchner, "Danish Life in Town and Country" (Put., \$1.20); Carpenter, "Geographical Reader of Europe" (A.B.C., \$0.75); Coe, "Modern Europe" (S.B.C., \$0.60); Coolidge, "The Alps in Nature and History" (Dutt., \$2.50); Corbin, "Schoolboy Life in England" (H.B., \$1.25); Davis, "About Paris" (H.B., \$1.25); Davis, "Our English Cousins" (H.B., \$1.25); Davis, "The Rulers of the Mediterranean" (H.B., \$1.25); Dillon, "Motor Days in England" (Put., \$3.00); Du Chaillu, "Land of the Long Night" (Scrib., \$2.00); Edwards, "Through Scandinavia to Moscow" (R. Clarke Co., Cincinnati, \$1.50); Emerson, "European Glimpses and Glances" (Cassell & Co., New York, \$1.00); Finck, "Spain and Morocco" (Scrib., \$1.25); Geikie, "The Scenery in Scotland" (McM., \$3.50); Green, "A Short Geography of the British Isles" (McM., \$0.90); Green, "Army Life in Russia" (Scrib., \$1.25); Hapgood, "Russian Rambles" (H.M.C., \$1.50); Herbertson, "Descriptive Geographies" ("Europe," \$0.90; "The British Empire," \$0.75, McM.); King, "Northern Europe" (Lee & Shepard, Boston, \$0.60); Knight, "Over-sea Britain" (Dutt., \$2.00); Loring, "A Year in Portugal" (Put., \$1.50); Lubbock, "The Scenery of Switzerland" (McM., \$1.50); Lyde, "A Geography of the British Isles" (McM., \$0.60); MacDonald, "Paris of the Parisians" (Lipp., \$1.50); MacParis of the Parisians (Lipp., \$1.50); MacParis

(J. Lane Co., New York, \$3.00); Moncrieff, "The Peak Country" (McM., \$2.50); Monroe, "Norway, its People, its Fjords, and its Fjelds" (L. C. Page, Boston, \$3.00); Nixon-Roulet, "Our Little Grecian Cousin" (L. C. Page, Boston, \$0.60); Partsch, "Central Europe" (App., \$2.00); Paton, "Picturesque Sicily" (H.B., \$2.50); Pratt, "Legends of Norseland" (E.P.C., \$0.40); Pratt, "Stories of England" (E.P.C., \$0.40); Pratt, "Stories from Old Germany" (E.P.C., \$0.40); Rushing, "European Days and Ways" (Jennings & Graham, Cincinnati, \$1.50); Sime, "Geography of Europe" (McM., \$0.80); Stephens, "Portugal" (Put., \$1.50); Stepniak, "The Russian Peasantry" (H.B., \$1.25); Stepniak, "Russia under the Tzars" (Scrib., \$1.50); Stevenson, "An Inland Voyage" (Scrib., \$1.50); Stevenson, "Travels with a Donkey in the Cevennes" (McM., \$0.25); Stoddard, "Spanish Cities" (Scrib., \$1.50); Sullivan, "Lands of Summer" (H.M.C., \$1.50); Thomas, "Sweden and the Swedes" (R.McN., \$3.75); Tozer, "Islands of the Ægean" (Oxford Pub. Co., New York, \$2.25); Tyndall, "Hours of Exercise in the Alps" (App., \$2.00); Van Norman, "Poland, the Knight among Nations" (F. H. Revell Co., New York. (App., \$2.00); Van Norman, "Poland, the Knight among Nations" (F. H. Revell Co., New York, \$1.50); Wendell, "The France of To-day" (Scrib., \$1.50); Series: French, German, Russian, Dutch and Swiss "Life in Town and Country" (Scrib., \$1.50); Series: French, German, Russian, Dutch, and Swiss, "Life in Town and Country" (Put., \$1.20 each); Bosson, "Sicily, the Battlefield of Nations and of Nature" (N.G.M., Jan., '09: 97); Bracq, "Colonial Expansion of France" (N.G.M., June, '00: 225); "Bulgaria, the Peasant State" (N.G.M., Nov., '08: 760); Coffin, "Where East meets West" (N.G.M., May, '08: 309); Curtis "The Great Turk and his Lost Provinces" East meets West" (N.G.M., May, US: 303); Curtis, "The Great Turk and his Lost Provinces" (N.G.M., Feb., '03: 45); Gore, "As seen from a Dutch Window" (N.G.M., Sept., '08: 619); Grosvenor, "The Growth of Russia" (N.G.M., May, '00: 169); Koch, "In Quaint, Curious Croatia" (N.G.M., Dec., '08: 809); Koch, "Gibraltar" (J.G., Nov., '05: 378); Koch, "The Forbidden Balkans" (J.G., Oct., '06: 354; Nov., '06: 406; Dec., '06: 451); Matthes, "The Dikes of Holland" (N.G.M., June, '01: 219); Mead, "The Expansion of England" (N.G.M., July, '00: 249); Noyes, "A Visit to Lonely Iceland" (N.G.M., Nov., '07: 731); "Servia and Montenegro" (N.G.M., Nov., '08: 774); Wright, "The World's Most Cruel Earthquake" (N.G.M., April, '09: 373); "Austria" (J.S.G., Dec., '98: 394); Barrett, "Features of Norway and its People" (J.S.G. Sept., '01: 241; Oct., '01: 294); Jefferson, "Cæsar and the Central Plateau of France" (J.G., Nov., '07: 113); Jefferson, "Man in West Nor-" (J.G., Dec., '07: 113); Jefferson, "Man in West Nor-" (J.G., Dec., '07: 113); Perferson, "Man in West Nor-" (J.G., Dec., '07: 113); Perferson, "Man in West Nor-" (J.G., Dec., '07: 113); Perferson, "Man in West Nor-" (J.G., Dec., '07: 113); Perferson, "Man in West Nor-" (J.G., Dec., '08: 26); Perpendig "Mistrare" Curtis, "The Great Turk and his Lost Provinces "Cæsar and the Central Plateau of France" (J.G., Nov., '07: 113); Jefferson, "Man in West Norway" (J.G., Dec., '08: 86); Reynolds, "Mistress Europe Teaching her School" (J.S.G., Sept., '00: 241); "The Geography of Greater London" (J.S.G., Feb., '01: 41); "Notes on the Geography of Scotland" (J.S.G., May, '98: 161); "The Temperature of the British Isles" (J.S.G., Dec. '08: 361) Dec., '98: 361).

ASIA. — Bishop, "Unbeaten Tracks in Japan" (Put., \$2.50); Bramhall, "Wee Ones in Japan" (H.B., \$1.00); Brownell, "The Heart of Japan" (H.B., \$1.00); Brownell, "The Heart of Japan" (McClure, Phillips & Co., New York, \$1.50), Carpenter, "Geographical Reader: Asia" (A.B.C., \$0.60); Colquhoun, "China in Transformation" (H.B., \$3.00); Colquhoun, "Overland to China" (H.B., \$3.00); Curtis, "Howadji in Syria" (H.B., \$1.50); Douglas, "The Land where Jesus Christ Lived" (Thomas Nelson & Son, New York, \$1.00); Giles, "China and the Chinese" (McM., \$1.50); Griffis, "Korea, the Hermit Nation" (Scrib., \$2.50); Hamilton, "Korea" (Scrib., \$1.50); Herbertson, "Descriptive Geography, Asia" (McM., \$0.80); Hogarth, "The Nearer East" (App., \$2.00): Hosie. "Manchuria: its People, Re-\$0.80); Hogarth, "The Nearer East" (App., \$2.00); Hosie, "Manchuria: its People, Resources and Recent History" (Scrib., \$2.50); Kipling, "The Jungle Books" (Cent., \$1.50); Knight, "Where Three Empires Meet" (L.G., \$1.25); Lee, "When I was a Boy in China" (Lothrop Pub. Co., Boston, \$0.60); Little, "Through the Yangtse Gorgea" (Scrib., \$2.50); Lyall, "The Rise of the British Dominion in India" (Scrib., \$1.50); Lyde, "A Geography of Asia" (McM., \$0.50); Mathews, "New Testament Times in Palestine" (McM., \$0.75); Norman, "The in Palestine" (McM., \$0.75); Norman, "The Real Japan" (Scrib., \$1.50); Parker, "China, from Earliest Times to the Present Day" (Dutt., \$2.50); Pratt, "Stories of China" (E.P.C., \$0.40); Pratt, "Stories of India" (E.P.C., \$0.40); Ralph, "Alone in China" (H.B., \$2.00); Scidmore, "Jinrikisha Days in Japan" (H.B., \$2.00); Smith, "Blue Waters and Green and the Far East To-day" (Crane & Co., Topeka, Kan., \$1.50); Smith, "Life in Asia" (S.B.C., \$0.60); "The Crisis in China" (H.B., \$1.00); Austin, "Commercial Prize of the Orient" (N.G.M., Sept., '05: 399); Barrett, "China, her History and Development" (N.G.M., Luna, '01: 200). Lula, '01: 266). Crasson "Bar "China, her History and Development" (N.G.M., June, '01: 209; July, '01: 266); Cresson, "Persia, the Awakening East" (N.G.M., May, '08: 356); Fairchild, "Travels in Arabia and along the Persian Gulf" (N.G.M., April, '04: 139); Grosvenor, "Siberia" (N.G.M., Sept., '01: 317); Harris, "Some Ruined Cities of Asia Minor" (N.G.M., Nov., '08: 741; Dec., '08: 833; Jan., '09: 1); Hill, "A Trip through Siberia" (N.G.M., Feb., '02: 37); Webster, "Japan and China" (N.G.M., Feb., '01: 70); Williams, "The Link Relations of Southwestern Asia" (N.G.M., July, '01: 249: Aug., '01: 291): "Korea and the relations of Southwestern Asia" (N.G.M., July, '01: 249; Aug., '01: 291); "Korea and the Koreans" (N.G.M., Vol. 2, '90: 231); Fenneman, "Geography of Manchuria" (J.G., Jan., '05: 6); Huntington, "Khirghiz Nomads and their Influence on the High Plateaus" (J.G., May, '08; 313); "The Russo-Siberian Plain" (J.S.G., March, '00: 21) **'00**: 81).

AFRICA. — Badlam, "Views in Africa" (S.B.C., \$0.72); Bigelow, "White Man's Africa" (H.B., \$2.50); Bryce, "Impressions of South Africa" (Cent., \$3.50); Carpenter, "Geographical Reader of Africa" (A.B.C., \$0.60); Crosby, "Abyssinia, the Country and People" (N.G.M., March, '01:

89); Curtis, "Nile Notes of a Howadji" \$1.50); Davis, "The Congo and Coasts of A (Scrib., \$1.50); Drummond, "Tropical A (Scrib., \$1.00); Du Chaillu, "My Apingi dom"; "Wild Life Under the Equator" \$1.25 each); Edwards, "A Thousand Mil the Nile" (Dutt., \$2.50); Herbertson, "Detive Geography, Africa" (McM., \$0.70); Hi "Oom Paul's People" (App., \$1.50); Kir "Some African Highways" (Dana, Estes (Boston, \$1.50); Lyde, "A Geography of A (McM., \$0.50); Penfield, "Present Day E (Cent., \$2.00); Rawlinson, "The Story of A Egypt" (Put., \$1.50); Selous, "African I Note and Reminiscences" (McM., \$3.00); "A Hunter's Wanderings in Africa" (\$2.50); Stanley and others, "Africa: its tition and its Future" (Dodd, Mead & New York, \$1.25); Stanley, "My Dark panions" (Scrib., \$2.00); Stanley, "My Dark panions" (Scrib., \$2.00); Stanley, "My Dark (Scrib., \$1.50); Traill, "From Cairo t London Frontier" (John Lane, New York, \$ Verner, "Pioneering in Central Africa" (P tarian Board of Publication, Philadelphia, \$ White, "A Little Story of South Africa and East Coast" (A. Flanagan, Chicago, \$0.50); \$1.50); 89); Curtis, "Nile Notes of a Howadji" White, "A Little Story of South Africa and East Coast" (A. Flanagan, Chicago, \$0.50); Yhusband, "South Africa of To-day" (McM., \$1.50) husband, "South Africa of To-day" (McM., a "Abyssinia" (N.G.M., March, '01: 89); "since 1888" (N.G.M., March, '06: 157); A Address of President Hubbard, "Africa, it and Future" (N.G.M., Vol. 1, '89: 99); B "Biskra, the Ziban Queen" (N.G.M., Aug 563); Bridgeman, "The New British Emr Sudan" (N.G.M., May, '06: 242); Hilder, ish South Africa and the Transvaal" (N. March, '00: 81); Landor, "Across the W. Africa" (N.G.M., Oct., '08: 694); Perd "Morocco, the Land of the Extreme (N.G.M., March, '06: 117); "The Gold Ashanti and Kumassi" (N.G.M., Jan., '9; Williams, "The Diamond Mines of South A (N.G.M., June, '06: 344); Wollaston, "Am Snow Peaks of the Equator" (N.G.M., Marc 256); Platt, "Climatic Control in the D (J.S.G., Sept., '00: 255); "The Egyptian and its History" (J.S.G., Feb., '99: 41).

Australia and the Islands of the Pacil

Australia and the Islands of the Pach Ballou, "Under the Southern Cross" (H \$1.50); Carpenter, "Geographical Reader, tralia and Islands of the Sea" (A.B.C., Chalmers, "Pioneer Life and Work in New Gu (F. H. Revell & Co., New York, \$1.50); I "Life and Progress in Australasia" (New Sterdam Book Co., New York, \$2.50); He son, "Descriptive Geography: Australia Oceanica" (McM., \$0.80); José, "Australia New Zealand" (McM., \$0.40); Kellogg, "Au and the Islands of the Sea" (S.B.C., Loughman, "New Zealand at Home" (\$1.75); Nixon-Roulet, "Our Little Austrousin" (L. C. Page & Co., Boston, \$1.50);

Pratt, "Stories of Australasia" (E.P.C., \$0.40);
Reeves, "Brown Men and Women" (McM., \$3.50); Shoemaker, "Islands of the Southern (N.G.M., May, '05: 229); "Samoa" (N.G.M., Seas" (Put., \$2.25); Grimshaw, "In the Savage South Seas" (Lipp., Phila.); Lloyd, "New Zealand" (N.G.M., Sept., '02: 342); Morgan, (J.G., Jan., '06: 18).

APPENDIX I

TABLES OF AREA, POPULATION, ETC.

Note. — The figures, 1910, etc., refer to the year in which the Census was taken or the estimate was Most of the recent figures are obtained from the United States Census Reports of 1910 or from "The States Year Book," 1912.

		SIZE OF	EARTH	
	Length of Earth's Diameter at the Equator (miles) Length of Equator (miles)	7,926 24,902	The Earth's Surface (square miles)	. 191 . 141
	CONTINENTS AND	PRINCIPAL	COUNTRIES, COLONIES, ETC.	
	Area in		Area in	
	Square Miles		Square Miles	Po
	North America	125,000,000	British Empire, 1910	801
	Alaska, 1910	64,856 88,899	British Isles, 1910	44
	Bahama Islands, 1911	55,944	Corsica, 1911	•
	Antigua, 1911 170 Bahama Islands, 1911 5,450 Bermuda Islands, 1911 20	18,994	Crete, 1911	
	British Honduras, 1911	40,458	Denmark, 1911	9
	Canada, 1911	7,192,888	England, 1911 50,890 England and Wales, 1910	84
	Costa Rica, 1910	879,588 9,15 0,112	England and Wales, 1910	86
	Greenland, 1901	11,898	France, 1910	86
	Quetemele 1910 48 990	1,992,000	German Empire, 1910	64
	Guatemala, 1910 48 290 Haiti (Island), 1909 10,204	2,029,700	Great Britain, 1910	41
	Honduras, 1910	558,446	Greece, 1909	9
	Jamaica, 1910	862,422	Hebrides Islands	
	Mexico, 1910	15,068,207	Hungary, 1910125,480	80
	Newfoundland, 191042,784	287,581	Iceland, 191089,756	
	Labrador, 1910	4,076 600,000	Ireland, 1911	4
	Panama, 1909	419.029	Italy, 1910	91
	8t. Croix, 1901	18,401	Luxemburg, 1910998	
	St. Thomas, 1901	11.269	Malta, 191095	
	Balvador, 1910	1 070,555	Monaco, 1909	
	T-14 A BA-A 40F		Montenegro, 1909	
	United States, see p. 425		Netherlands, 1910 12,648 Norway, 1910 124,180	1
	South America	49,000,000	• •	_
	Argentins, 1910	7,091,822 2,267,985	Orkney Islands, 1911	
	Bolivia, 1910	21,461,100	Prussia, 1910 185,184	4
	Chile, 1910	8,829,080	Roumania, 1910	ì
	Colombia, 1908	4,808,000	Russia, 1910	118
•	Renador, 1910		Russian Empire, 1910	166
	Rouador, 1910 116,000 Galapagos Islands, 1910 5,500 Falkland Islands, 1911 5,000	1,500,000	San Marino, 1910	
	Falkland Islands, 19115,500	2,272	Bardinia, 1910	
	Guiana, British, 1911	296 ,000	Scotland, 1910	•
	Guiana, Dutch, 191046,060	85,094	•	•
	Guiana, French, 1911	49,009	Shetland Islands, 1911	_
	Paraguay, 1910	752,000 4,000,000	Sloily, 1910. 9,985 Spain, 1910. 194,788	19
	Peru, 1910	uninhabited	Sweden, 1910	- "1
			Switzerland, 1910	ı
	Tobago, 1911	880,074	March are 1000	4
	Trinkaga Island, 1911	1.112.000	Turkey, 1909. 65,850 Turkish Empire, 1909. 1,565,000	×
	Uruguay, 1910	2,718,708	Wales, 1911	1
	Europe	489,000,000	Asia with East Indies	91
	Andorra,	5,281	Aden, 1911	
	Austria, 1910	28,567,898	Aden, 1911	ı
	Austria-Hungary, 1910	51,828,921 825,708	Arabia 1,200,000 Raluchistan, 1911 184,688	•
	Baleario Islos, 1910	7,516,780	Bhutan, 1909	
		.10201.00	QA	

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	Ares in Square Miles	Population	Ares in Square Miles	Population
Bokhara, 1909 Burma, 1911	88,000 286,788	1,250,000 19,115,217	Madagascar, 1911	8,054,658 150,574
Ceylon, 1911	000.840	3,592,897 407,258,080 488,425,000 1,200,000 261,587	Mauritius (Br.), 1910 .885 Morocco, 1909 .919,000 Natal, 1911 .85,871 Nigeria, Northern, 1911 .256,400	879,184 { 4,840,000- } 4,580,000 1,191,958 9,969,000
Formosa, 1910	18,458 196 256,000	8,128,471 277,000 16,815,068 815,182,587	Nigerta, Southern, 1911 77,260 Orange Free State, 1910 50,892 Portuguese East Africa, 1901 298,400 Portuguese Guinea, 1901 18,940	7,856,689 478,815 8,120,000 820,000
Japan, 1910. Khiva, 1909. Korea, 1911. Manchuria, 1909. Mongolia, 1906.	24,000 86,000 868,610 .1,867,600	50,751,919 800,000 18,125,027 16,000,000 2,600,000	Réunion Island (Fr.), 1907 910 St. Helena (Br.), 1911 47 Sierra Leone and Protectorate (Br.), 1910 30,000 Spanish Africa, 1910 85,814 Togo, 1910 83,700	201,000 8,520 1,100,000 235,844 1,000,000
Mepal, 1909	82,000 10,000 628,000	5,000,000 500,000 700,000 9,500,000 800,000	Transvaal, 1910. 110,426 Tripoli (Turk.), 1906. 398,900 Tunis (Fr.), 1910. 45,779 Uganda Protectorate, 1910. 228,500 Zanzibar (Br.), 1910. 1,020	1,400,000 1,000,000 1,923,217 8,500,000 200,000
Portuguese Indies, 1901		24,889,000	Australia, Commonwealth of	4,400,000
Siam, 1909 Siberia, 1910 Straits Settlements, 1911 Sungaria, 1901 Tibet, 1909	1,472 147,950	6,686,486 8,220,100 714,069 600,000 6,500,000	New South Wales, 1910 310,872 Northern Territory, 1910 523,620 Queensland, 1910 670,500 South Australia, 1910 380,070 Tasmania, 1910 26,215	1,621,677 8,289 572,654 412,908 186,860
Turkey in Asia, 1909	•	17,688,500	Victoria, 1911 87,884 Western Australia, 1911 975,920	1,815,000 288,986
Absorbio 1910		125,000,000 5,000,000	East Indies and larger islands of the Pacific 1,200,000	47,000,000
Abyssinia, 1910 Algeria (Fr.), 1911 Anglo-Egyptian Sudan, 1949 Angola, 1949 Belgian Congo, 1909	950,000 484,800 909,650	5,568,828 2,868,000 4,119,000 20,000,000	Borneo, 1905 298,848 Celebes, 1905 71,470 Fiji Islands, 1910 7,740 Hawaiian Islands, 1910 6,449 Java and Madura, 1905 50,054	1,944,655 851,905 188,881 191,909 80,098,006
British Somaliland, 1910	276,995 1,480 400,000	848,000 419,809 2,510,000 147,424 11,189,978	Molucca Islands, 1905	407,906 55,000 200,000
Eritrea (Italy), 1906 French Congo, 1907 French Somaliland, 1907 Gambia (Br.), 1910 German East Africa, 1909		450,000 5,000,000 180,000 160,000 10,000,000	Dutch Guinea, 1905. .90,540 Gernan Guinea, 1910 .95,160 New Zealand, 1910 .104,751 Philippine Islands, 1910 .15,026 Samoa Islands, 1910 .1,079	851,608 856,000 1,048,847 8,276,809 41,140
German Southwest Africa, 1909	119,200 189,480 191,180	120,000 1,5(0),000 4(0,000 8,000,000 \$1,500,000 2,100,000	Solomon Islands (Br.), 1910 12,000 Solomon Islands (Ger.) 4,200 Sumatra, 1905 161,612 Total Area of Continents Total Population	
RTAT	ES AND T	•	OF THE UNITED STATES	,
Area in Square Miles	Population 1900	Population	Area in Population	Population 1910
Alabama .51,998 Alaska .590,884 Arizona .113,956 Arkansas .58,885 California .158,297	1,828,697 68,592 122,981 1,811,564 1,485,058	2,188,098 64,856 204,854 1,574,449 2,377,549	Square Miles 1900 Maine. 38,040 694,466 Maryland 12,827 1,188,044 Massachusetts 8,266 2,805,346 Michigan 57,950 2,420,963 Minnesota 84,663 1,751,894	742,871 1,295,846 8,866,416 2,810,178 2,075,708
Colorado 108,948 Connecticut 4,965 Delaware 2,870 District of Columbia 70 Florida 58,666	589,700 906,420 184,785 978,718 528,542	799,024 1,114,756 202,822 881,069 752,619	Mississippi 46,865 1,551,270 Missouri 69,420 8,106,665 Montana 146,572 248,329 Nebraska 77,520 1,066,309 Nevada 110,690 42,885	1,797,114 8,298,885 876,058 1,192,214 81,875
Georgia 59,265 Guara 210 Hawaiian Islands 6,449 Idaho 84,313 Iltinois 56,665	2,216,881 8,561 154,001 161,772 4,821,550	2,609,121 11,978 191,909 825,594 5,688,591	New Hampshire 9,841 411,588 New Jersey 8,224 1,883,669 New Mexico 122,684 105,310 New York 49,204 7,268,884 North Carolina 52,426 1,998,810	480,579 2,587,167 827,801 9,118,614 2,206,287
Indiana 36,854 Iowa 56,147 Kanasa 82,158 Kentucky 40,598 Louisiana 48,506	2,516,462 2,281,858 1,470,495 2,147,174 1,881,625	2,700,876 2,224,771 1,690,949 2,299,905 1,656,888	North Dakota 70,837 319,148 Ohio 41,040 4,157,545 Oklahoma 70,057 70,839 Oregon 96,699 418,586 Pennsylvania 45,126 6,802,115	557,056 4,767,121 1,657,155 672,765 7,666 ,111

APPENDIX

Area in Square Miles Philippine Islands	Population 1900 7,860,551 962,019 428,556 1,840,816 401,570 2,020,616 8,048,710	Population 1910 8,276,802 1,118,012 542,610 1,515,400 588,888 2,184,789 8,896,542	Washington West Virginis Wisconsin Wyoming United States,	Ares in Square Miles 42,627 69,127 69,127 54,170 55,066 97,914 tetal 2,524,122 (without Alaska.	Population 1900 1,854,184 518,108 958,800 2,009,043 92,581 77,254,630	Population 1910 2,061,412 1,141,990 1,221,119 2,828,800 145,965 98,462,151
Tutuila	8,800 276,749 843,641	6,780 878,851 855,956		iands, etc.)	75,994,575	91,972,986
,	·		' Arst Citirs	IN THE WORLD		
I W BIN I	1-1112 01	Population				Population
1. London, England, 1910		4,872,702	18. Calcutta,	India, 1910inople, Turkey		1,916,514
Greater London, 1910. 2. New York, U.S., 1910 3. Paris, France, 1911 4. Tokyo, Japan, 1909		2,846,986 2,168,069	10. Obaka, J	apau, 1900	· · · · · · · · · · · · · · · · · · ·	1,117,101
5. Chicago, U.S., 1910			17. Tientsin, 18. Rio de Ju	aneiro, Brazil, 1909	. 	1,000,000
6. Rerlin, Germany, 1910		2,070,695 2,004,291 1,907,708	19. Bombay, 20. Hamburg	i, China		979,892 986,000
9. Canton, China		1,549,008	21. Liverpoo 22. Glasgow.	l, England, 1910 , Scotland, 1909		767,606 879,091
			23. Warsaw, 24. Budapest	Russia, 1901t, Austria-Hungary, 1901		756,496 789_899
11. Moscow, Russia, 1907		1,826,994	25. Barcelon	a, Spain, 1911	••••••	700,000
TWENT	Y-FIVE LA	RGEST CIT	IES IN THE	UNITED STATES		
	Population 1900	Population 1910			Population 1900	Population 1910
1. New York, N.Y. 2. Chicago, Ill.	1,698,575	4,766,883 2,185,288 1,549,008	14. Newark, 15. New Orle	N.Jeans, La	246,070 287,104	847,469 889,075
8. Philadelphia, Pa. 4. St. Louis, Mo. 5. Boston, Mass.	575,238	687,029 670,585	16. Washing	ton, D.C.	978,718	881,060 819,196
6. Cleveland, Ohio	508,957	560,663 558,485	18. Minneapo 19. Jersey Cl 20. Kansas C	bles, Cal. blia, Minn. lty, N.J. lty, Mo.	205,718 206,488 168,759	801,406 267,779 948,881
8. Pittsburgh, Pa. 9. Detroit, Mich. 10. Buffalo, N.Y.	285,704	533,905 465,766 423,715	21. Seattle, V 22. Indianape 23. Providen	Washolis, Indce, R.I.	90,671	287,194 268,650
11. San Francisco, Cal	295,815	416,912 878,857 864,468	24. Louisville 25. Rochester	e, Ky. r, N.Y.	204,781 162,606	994,896 938,998 918,146
GROWTH O	F THE FI	FTEEN LA	RGEST CITIES	OF THE COUNTRY		
City	1800		1880		1900	1910
1. New York, N.Y. 2. Ohicago, Ill. 3. Philadelphia, Pa. 4. St. Louis, Mo. 5. Boston, Mass. 6. Cleveland, Ohio. 7. Baltimore, Md. 9. Pittsburgh, Pa. 9. Detroit, Mich. 10. Buffalo, N.Y. 11. San Francisco, Cal.	. 41,220 (2) . 10,049 (1826 . 24,987 (4) 606 (1826 26,514 (8) 1,565 (5) . 1,422 (182	4 80 0) 14 61 0) 1 80 12	,112 (1) ,470 (1840) ,462 (3) ,125 (7) ,892 (4) ,076 (12) ,620 (2) ,588 (8) ,522 (11) ,668 (10)	1,099,850 (3) 1,66 1,046,964 (3) 1,29 451,770 (4) 57 448,477 (5) 56 261,858 (9) 88 484,489 (6) 50 288,617 (12) 85	7,302 (1) 8,575 (2) 8,697 (8) 5,288 (4) 0,892 (5) 1,768 (7) 8,957 (6) 1,616 (11) 5,704 (18) 2,887 (6) 12,789 (9)	4,746,998 2,185,998 1,549,008 667,099 670,565 500,668 556,485 588,905 445,764 498,715 416,912
12. Milwaukee, Wis. 18. Cincinnati, Ohio.	9 540 (1810	n 1,	172 (1840) 881 (6)	204,468 (14) 25 296,908 (8) 85	5,815 (14) 5,902 (10)	878,857 864,468
14. Newark, N.J. 15. New Orleans, La.	8,008 (1810))	958 (9) 787 (5)	161.880 (15)	6,070 (15) 7,104 (13)	847,468 889,075
CITIES OF THE UNITED STATES	WITH 25,000	OR MORE		es in 1910; and a Fi		
Population,		lation, 1910		Population	, 1900 Pons	listica, 1916
Akron, Ohio 42.738 Albany, N.Y. 94.151 Albuquerque, N.M. 6.238 Allentown, Pa. 35.416 Altoona, Pa. 38,978	1	69,067 00,258 11,020 51,918 52,127	Astoria, Ore Atchison, Kar			11,504 9,509 16,499 54,809 46,150
Amsterdam, N.Y	;	81, 267 10,184	Auburn, Me Auburn, N.Y.	12,95	1 ·	15,064 84,068 41,040
Annapolis, Md. 8,575 Ann Arbor, Mich. 14,600 Asheville, N.C. 14,604		8,609 14,817 18,769	Augusta, Ga Augusta, Me.		l B	41,040 18,911 30,007

Population, 1900	Population, 1910	Population, 1900	Population, 1910
Tex 22.258	29,860	Evansville, Ind	69,647
re, Md	558,485 94,808	Everett, Mass	88,484 119,995
7t. 8,448 (a	10,784 9,896	Fall River, Mass. 104,868 Fargo, N.D. 9,589 Findlay, Ohio. 17,618	14,881 14,958
touge, La	14,897	Fitchburg Wass 81 581	87,826
touge, La. 11,909 kreek, Mich. 18,568 y, Mich. 40,747	95,267 45,166	Flint, Mich	88,550 63,988
e, N.J	55,545 24,296	Flint, Mich. 18,108 Fort Wayne, Ind. 45,115 Fort Worth, Tex. 26,688 Frankfort, Ky. 9,487	78,81 9
- Col 19 914	40,484		10,465
y, Cal. 18,914 rd, Me. 16,145 , Mont. 3,921 aton, N.Y. 39,647 rhem, Ala. 38,415	17,079	Fresno, Cal. 12,470 Galveston, Tex. 87,789	94,899 86,9 81
, Mont	10,081 48,448	Gloucester, Mass	24,898 4,888
	182,685	Goldfield, Nev	119,571
Aris	9,019 5,448	Green Ray Wis 18 684	8,179 25,286
ugton, Ill	25,768 17,858	Green Bay, Wis. 18,684 Greenville, S.C. 11,860	15,741
	670,565	Guthrie, Ok	11,654 85,279
d, Pa	14,544	Harrisburg, Pa. 50,167 Hartford, Conn. 79,850 Haverhill, Mass. 37,175 Hazelton, Pa. 14,280 Helena, Mont. 10,770	64,186
ort, Conn	102,054 56,878	Haverhill, Mass	98,915 44,115
pe, Mass. 19,985 lok, Ga. 9,061	27,792 10,182	Hazelton, Pa	25,459 12,515
N.Y	428,715	High Point, N.C	9,525
tom, Vt	20,468 89,165	Hilo, Hawalian Islands 19,785 Hoboken, N.J. 59 884	6,745 70,824
lge, Mass	104,889	Hoboken, N.J	57,780
	94,588 50,917	Hot Springs, Ark. 9.978	59,188 14,484
Ohio	2,466	Houghton, Mich	5,118
dgn, Ill	82 ,811 12,421	Houghton, Mich. 8,595 Houston, Tex. 44,638 Huntington, W. Va. 11,938 Huntsville, Ala. 8,068	78,900 8 1,161
	58,888		7,611
ton, W. Va	22,996 84,01 <u>4</u>	Indianapolis, Ind	988,650 19,448
cogs, Tenn	44,604 82,459	Ishpeming, Mich. 18,265 Ithaca, N. Y. 18,186 Jackson, Mich. 25,180 Jackson, Miss. 7,816	14,909 81,488
	88,587	Jackson, Miss	21,262
be, Wyo. 14,087 , II. 1,698,675 e, Masse. 19,167 att, Ohio 825,909	11,320 2 ,185,238	Jacksonville, Fla	57,699 81,297
e, Mass	25,401	Jefferson City, Mo	11,850 967,779
ille, Tenn	864,468 8 ,54 8	Jacksonville, Fla. 28,429 Jamestown, N.Y. 22,892 Jefferson City, Mo. 9,664 Jersey City, N.J. 206,438 Johnstown, Pa. 35,986	55,489
nd, Ohio	560,668 25,577	Joliet, Ill	84,670 82,078
Iowa 22,008 o Springs, Colo 21,065 ta, 8.C 21,106	29,078	Juneau, Alaska	1,644
us, Ga	26,819 20,554	Kalamazoo, Mich	89,487 82,881
us, Ohio	181,548	Kansas City, Mo. 163,752 Key West, Fla. 17,114 Kingston, N.Y. 24,635 Knozville, Tenn. 32,687	948,881 10.048
l, N.H. 19,632 Bluffs, Iowa 25,809	21,497 29,292	Kingston, N.Y	19,945 25,908
on, Ky	58,270 6, 906	Knoxville, Tenn	86,846 80,417
Tex42,638	92,104	Lancaster, Pa	47,227
s, Ill. 16,854 s, Va. 16,520	27,871 19,020	Lansing, Mich	81,229 8,287
ert, Iows	48,028 116,577	Lawrence, Mass. 62,559 Leadville, Colo. 12,455	85,899 7,508
, III	81,140	Lewiston, Idaho	6,048
Colo	918,881 86,868	I Tauriston Ma 98 781	95,247 85,099
Mich285,704	465,766	Lexington, Ky. 26,869 Lima, Ohlo 21,728 Lincoln, Neb. 40,169	80,50 9 48,978
ı, Ariz	6,487 8,720	Little Rock, Ark	45,941
N.H. 18,207 ie, Iowa86,297	18,247	Lockport, N.Y	17,970 28,888
Minn	88,494 78,466	Lorain, Ohio 16,028 Los Angeles, Cal. 127,927 Los Angeles, Cal. 127,927	819,198
1, N.C	18,241 28,528	Louisville, Ky	928,928 106,294
Pa. 25,288 ange, N.J. 21,506 t, Me. 5,811 Louis, Ill. 29,655	84.871	Lowell, Mass	29,494 89,886
Louis, Ill	4,961 58,547	Lynn, Mass	40,665
ш	25,976	Madison, Wis	25,581
h, N.J	78,409 87,176	Malden, Mass	44,404 70,068
, Tex	89,279 66,525		11,508
m, III	94,978	McKeesport, Pa	49,604
		`	

Population, 1900	Population, 1910	Population, 1900	Population, 1910
Memphis, Tenn. 102,820 Meriden, Conn. 24,296 Miami, Fla. 1,681 Illwaukee, Wis. 295,815 Minneapolis, Minn. 202,718	181,105 27,265 5,471 878,857 801,408	Sacramento, Cal. 29,282 Saginaw, Mich. 42,845 St. Augustine, Fla. 4,273 St. Joseph, Mo. 102,979 St. Louis, Mo. 575,288	44,696 50,510 5,494 77,408 687,029
Mobile, Ala. 38,469 Montgomery, Ala. 80,346 Montpeller, Vt. 6,266 Mount Vernon, N.Y 21,228 Muskogee, Okla. 4,254	51,521 88,136 7,856 80,919 25,278	8t. Paul, Minn. 163,065 Salem, Mass. 35,956 Salem, Ore. 4,258 Salt Lake City, Utah 58,531 San Antonio, Tex. 58,891	914,744 48,697 14,094 92,777 96,614
Nashna, N.H. 23,898 Nashville, Tenn. 80,865 Natchez, Miss. 12,210 Newark, N.J. 246,070 Newark, Ohio 18,157	26,005 110,364 11,791 847,469 25,404	8an Bernardino, Cal. 6,150 San Diego, Cal. 17,700 8an Francisco, Cal. 342,783 8an José, Cal. 91,500 8an Juan, Porto Rico, 1899 32,048	12,779 89,578 416,912 28,946 48,716
New Bedford, Mass. 52,442 New Britain, Conn. 25,998 Newburgh, N. Y. 24,943 Newcastle, Pa. 25,839 New Haven, Conn. 108,027	96,652 48,916 27,905 86,290 183,605	Santa Fé, N.M. 608 Bault Ste. Marie, Mich. 10,588 Savannah, Ga. 54,244 Schenectady, N.Y. 31,682 Beranton, Pa. 102,026	5,079 12,615 65,064 79,826 129,867
New Orleans, La. 287,104 Newport, Ky. 28,301 Newport, R.I. 22,441 Newport News, Va. 19,685 New Rochelle, N.Y 14,720	889,075 80,809 27,149 20,205 28,867	Seattle, Wash. 80,671 Shawnee, Okla. 3,464 Sheboygan, Wis. 22,963 Shenandoah, Pa. 20,821 Shreveport, La. 16,018	287,194 12,474 26,898 25,774 28,015
Newton, Mass	89,806 4,766,883 80,445 2,600 67,452	Sioux City, Iowa 88,111	47,828 14,094 1,089 873 77,286
Norristown, Pa. 22,265 North Yakima, Wash 3,154 Oakland, Cal 66,960 Ogden, Utah 16,318 Oil City, Pa. 18,264	27,675 14,092 150,174 25,580 15,657	South Bend, Ind. 35,999 South Omaha, Neb. 26,001 Spartanburg, S.C. 11,895 Spokane, Wash. 36,348 Springfield, Ill. 34,159	58,684 26,259 17,519 104,402 51,678
Oklahoma City, Okla. 10,087 Olean, N.Y. 9,462 Olympia, Wash 4,093 Omaha, Neb 102,555 Orange, N.J. 24,141	64,205 14,748 6,996 124,096 29,680	Springfield, Mass. 62,059 Springfield, Mo. 23,267 Springfield, Ohio 38,258 Stamford, Conn. 15,997 Stockton, Cal. 17,508	89,926 85,201 46,921 25,188
Oshkosh, Wis. 28,284 Oswego, N.Y. 22,199 Pasadena, Cal. 9,117 Passale, N.J. 27,777 Paterson, N.J. 105,171	38,062 28,368 80,291 54,778 125,600	Superior, Wis. 31,091 Syracuse, N.Y. 106,874 Tacoma, Wash. 37,714 Tallshassee, Fla. 2,981 Tampa, Fla. 15,889	28,258 40,884 187,249 88,748 5,018 87,789
Pawtucket, R.I. 89,231 Pensacoia, Fla. 17,747 Peoria, III. 56,100 Perth Amboy, N.J. 17,690 Petersburg, Va. 21,810	51,622 22,993 66,950 82,121 24,147	Taunton, Mass. 81,086 Terre Haute, Ind 86,673 Toledo, Ohto 181,822 Tonopah, Nev. 70peka, Kan 83,608	84,359 56,157 168,497 8,900 48,684
Philadelphia, Pa. 1,298,697 Phœnix, Ariz. 5,544 Pierre, S.D. 2,306 Pittsburgh, Pa. 321,616 Pittsdeld, Mass. 21,765	1,549,008 11,184 8,656 588,905 32,121	Trenton, N.J. 78,807 Troy, N.Y 60,651 Tucson, Ariz. 7,521 Utica, N.Y 56,888 Vicksburg, Miss. 14,684	96,815 76,818 18,198 74,419 20,814
Plymouth, Mass. 9,562 Pomona, Cal. 5,526 Ponee, Porto Rico, 1899 27,952 Portland, Me 50,145 Portland, Ore. 90,426	12,141 10,207 85,027 56,571 207,214	Virginia City, Nev. 2,695 Waco, Tex. 20,686 Walla Walla, Wash 10,049 Waltham, Mass. 23,481 Warwick, R. I. 21,816	2,944 26,425 19,868 27,884 26,629
Portsmouth, N.H. 10,687 Portsmouth, Vs. 17,427 Poughkeepsie, N.Y. 24,029 Prescott, Ariz. 3,559	11,269 88,190 27,986 5,092	Washington, D.C. 278,718 Waterbury, Conn 45,859 Waterloo, Iowa 12,580 Watertown, N.Y. 21,696 Waterville, Me. 9,477	881,069 78,141 26,698 26,780
Providence, R. I. 175,597 Provincetown, Mass., 1895 4,555 Pueblo, Colo. 28,157 Quincy, Ill. 36,259 Quincy, Mass. 23,899 Racine, Wis. 29,102	224,326 4,369 44,395 36,587 82,642	West Hoboken, N.J. 23,094 Wheeling, W. Va. 38,878 Wichita, Kan. 24,671 Wilkes Barre, Pa. 51,721 Williamsport, Pa. 28,757	11,468 85,408 41,641 52,450 67,105
Raleigh, N.C. 13, 648 Reading, Pa. 78, 961 Redlands, Cal. 4,797 Richmond, Va. 85,050 Riverside, Cal. 7,978	88,002 19,218 96,071 10,449 127,628	Wilmington, Del	81,860 87,411 25,748 18,568 88,135
Rosenster, Cal. 1,948 Rosenster, N.Y 162,608 Rockford, Ill. 81,051 Rome, Ga. 7,291 Ratland, Vt. 11,499	15,212 84,874 216,149 45,401 12,099 18,546	Worcester, Mass. .118,421 Yonkers, N.Y. .47,981 York, Pa. .88,708 Youngstown, Ohio. .44,895 Zanesville, Ohio .23,688	145,996 79,808 44,750 79,066 28,096

APPENDIX

FOREIGN CITIES MOST OF WHICH ARE MENTIONED IN THE TEXT

Population	Population
Aschen, Germany, 1910 156,044 Absokuta, Niger Territory 150,000 Aberdeen, Scotland, 1911 168,084 Acapulco, Mexico 5,000 Adelaide, Australia, 1910 199,000	Cuzoo, Peru, 1909. .10,000-15,000 Damascus, Turkey in Asia. .250,000 Danzig, Germany, 1910. .170,847 Dawson, Canada, 1901. .9,149
•	Delhi, India, 1911
Adis Ababa, Abyssinia .80,000-25,000 Alexandria, Egypt, 1907 .832,246 Algiera, Algeria, 1906 .183,240 Amsterdam, Netherlands, 1910 .573,983 Antwerp, Belgium, 1910 .320,640	Dover, England, 1905. 48,784 Dresden, Germany, 1910. 546,889 Dublin, Ireland, 1910. 403,928 Dundee, Scotland, 1911. 165,008 Dunedin, New Zealand, 1911. 64,287
Archangel, Russia, 1911 .85,000 Arequipa, Peru, 1908. .95,000-40,000 Asuncion, Paraguay, 1910 .84,000 Athens, Greece, 1907. .167,479 Auckland, New Zealand, 1911 .102,676	Durban, Natal, 1911 .81,896 Edinburgh, Scotland, 1911 .820,815 Elberfeld, Germany, 1910 .170,118 Essen, Germany, 1910 .294,629 Fez, Morocco, 1910 .140,000
Bagdad, Turkey in Asia .75,000 Bahia, Brazil, 1909. .230,000 Baku, Russia, 1904 .177,777 Ballarst, Australia, 1910 .44,000 Bangkok, Siam, 1909 .628,675	Flume, Austria-Hungary, 1910. 49,806 Florence, Italy, 1911. 999,405 Frankfort, Germany, 1910. 414,598 Fredericton, Canada, 1901. 7,117 Freetown, Sierra Leone, 1910. 37,699
Barcelona, Spain, 1911 700,000 Barmen, Germany, 1910 169,201 Basel, Switzerland, 1910 181,914 Batavia, Java, 1906 188,551 Belfast, Ireland, 1910 391,167	Fuchau, China, 1909 624,000 Geneva, Switzerland, 1910 125,520 Genoa, Italy, 1911 272,077 Georgetown, British Guiana, 1908 58,176 Ghent, Belgium, 1910 164,659
Belgrade, Servia, 1910. 84,235 Benares, India, 1911. 208,804 Bendigo, Australia, 1911. 42,000 Berbera, Br. Somaliland 38,000 Bergen, Norway, 1910. 76,917	Gibraltar, Spanish Pen., 1909 25,915 Glasgow, Scotland, 1910 784,455 Gothenburg, Sweden, 1910 167,813 Granada, Spain, 1910 74,368 Grimsby, England, 1910 74,288
Berlin, Germany, 1910 2,070,695 Berne, Switzerland, 1910 85,264 Bilbao, Spain, 1910 92,514 Birmingham, England, 1910 570,113 Bloemfontein, South Africa, 1911 14,760	Guatemala, Guatemala, 1910. 90,000 Guayaquil, Eonador, 1910. 80,000 Hague, The, Netherlands, 1910. 280,515 Halifax, Canada, 1911. 46,000 Halle, Germany, 1910. 180,551
Bogota, Colombia, 1910. 290,000 Bologna, Italy, 1911. 178,689 Bombay, India, 1910. 972,892 Bordeaux, France, 1911. 261,678 Bradford, England, 1910. 295,868	Hamburg, Germany, 1910 .986,000 Hamilton, Bermuda, 1907 .2,248 Hamilton, Canada, 1911 .83,000 Hammerfest, Norway .3,239 Hangchau, China, 1909 .850,000
Bremen, Germany, 1910 246,827 Breelau, Germany, 1910 511,891 Brindisi, Italy, 1907 22,021 Brisbane, Australia, 1909 143,077 Bristol, England, 1910 382,550	Hankau, China, 1909 .820,000 Hanover, Germany, 1910 .802,884 Havana, Cuba, 1910 .319,884 Havre, France, 1911 .186,109 Hebron, Holy Land .18,000-19,000
Brussels, Belgium, 1910	Helsingfors, Russia, 1908. 187,346 Hobert, Tasmanta, 1911. 27,719 Hongkong, China, 1908. 329,650 Hué, French Ind. China, 1910. 50,000 Hull, England, 1909. 275,552
Cairo, Egypt, 1907. 654,476 Calcutta, India, 1911 1.216,514 Calgary, Canada, 1911 44,000 Callso, Peru, 1908 31,000 Cambridge, England, 1905 88,760	Hyderabad, India, 1911. 500,628 Iquique, Chile, 1907. 40,171 Irkutsk, Siberia, 1908 108,060 Jaffa, Holy Land. 45,000 Jerusalem, Holy Land, 1910. 70,000
Canton, China 1,600,000 Cape Town, Cape of Good Hope, 1911 67,000 Caracas, Venexuela 72,429 Cardiff, Wales, 1910 199,189 Cartagena, Colombia, 1910 27,000	Johannesburg, Transvaal, 1910 158,580 Kabul, Afghanistan 60,000 Khartum, Egyptian Sudan, 1909 20,956 Khelat, Baluchistan 14,000 Kiev, Russia, 1909 468,712
Cartagena, Spain, 1910. 96,968 Catania, Italy, 1911. 211,699 Cayenne, French Guiana, 1910. 12,426 Cotting, Montenegro, 1906. 4,500 Chemnitz, Germany, 1910. 287,807	Kimberley, Cape of Good Hope, 1911. 18,656 Kingston, Canada 17,961 Kingston, Jamaica, 1911. 57,879 Kioto, Japan, 1998. 442,462 Königsberg, Germany, 1910. 245,858
Christohurch, New Zealand, 1911 80,193 Christiania, Norway, 1910 243,801 Cologne, Germany, 1910 516,167 Colon, Panama, 1910 19,300	Krefeld, Germany, 1910. 129,412 Kumassi, Ashanti, 1910. 7,000 La Guaira, Venezuela. 8,000 La Pax, Bolivia, 1909. 78,856 La Plata, Argentina, 1911. 100,608
Constantinople, Turkey 1,125,000 Copenhagen, Denmark, 1911 462,161 Cordoba, Argentina, 1911 70,850 Cordoba, Spain, 1910 65,160 Cork, Ireland, 1911 76,682	Lassa, Tibet

AREA, POPULATION, ETC.

Population	Pot
Leith, Scotland, 1911 80,489 Libreville, French Congo 8,000 Liege, Beigium, 1910 174,768 Lille, France, 1911 217,807 Lima, Peru, 1908 140,884	Rheims, France, 1911. Riga, Russia, 1908. Rio de Janeiro, Brazil, 1909. I, Rome, Italy, 1911. Rosario, Argentina, 1909. Rosario, Argentina, 1909. Recomplete R
Limoges, France, 1911 92,181 Lisbon, Portugal, 1900. 3856,009 Liverpool, England, 1910. 767,606 Loanda, Port. W. Africa 14,000 Lodz, Bussia, 1908. 388,596	Rotterdam, Netherlands, 1909. Roubaix, France, 1906. Rouen, France, 1906. St. Etlenne, France, 1906. St. John, Canada, 1911.
London, Canada, 1911. .46,000 London, England, 1910. .4,872,702 London, Greater, 1910. .7,587,196 Lourenco Marquez, Port. E. Africa, 1908. .9,849 Lucerne, Switzerland, 1910. .89,153	8t, John's, Newfoundland, 1911. 8t. Petersburg, Russia, 1910
Lucknow, India, 1011 259,798 Lyon, France, 1911 528,796 Madras, India, 1911 518,660 Madrid, Spain, 1910 571,539 Magdeburg, Germany, 1910 279,685	Santiago, Chile, 1907 Santo Domingo, Santo Domingo, 1909 Santos, Brazil, 1909 São Paulo, Brazil, 1909 Sooul, Korea, 1911
Malaga, Spain, 1910. 183,045 Manaos, Brazil, 1909. 50,000 Manchester, England, 1910. 716,854 Mandalay, Burma, 1910. 188,299 Marseille, France, 1911. 550,619	Seville, Spain, 1910 Sèvres, France Shanghai, China 1, Sheffield, England, 1910 Slangtan, China, 1908 1,
Maskat, Oman, 1907 25,000 Mecca, Turkey 80,000 Melbourne, Australia, 1910 591,880 Messina, Italy, 1911 126,172 Metz, Germany, 1910 68,667	Singapre, Chins, 1908
Mexico City, Mexico, 1910. 470,659 Milan, Italy, 1911. 599,200 Mocha, Turkey in Asia 5,000 Mombasa, Br. E. Africa, 1910. 80,000 Monrovia, Liberia, 1908. 8,000	Stettin, Germany, 1910 Stockholm, Sweden, 1910 Strassburg, Germany, 1910 Stuttgart, Germany, 1910 Suchan, China, 1908
Montevideo, Uruguay, 1909. 291,465 Montreal, Canada, 1911. 466,000 Morocco, Morocco 50,000 Moscow, Russia, 1909. 1,451,200 Munich, Germany, 1910. 595,058	Suchau, China, 1908
Nogoya, Japan, 1908. 378,231 Naples, Italy, 1911. 723,208 Naseau, Bahama, 1910. 12,584 Nazareth, Holy Land. 11,000 Nowcastle, England, 1911. 936,671	Tananaryo, Madagascar, 1909
Nice, France, 1911. 143,940 Nixhni Novgorod, Russia, 1904 92,278 Nottingham, England, 1910 266,471 Nuremberg, Germany, 1910 383,651 Odessa, Russia, 1909 478,900	Tashkend, Russian Turkestan, 1904. Teheran, Persia, 1905. Tiberias, Holy Land, 1905. Tientain, China, 19101, Tidis, Russia, 1904. Typhythy, Spries.
Oporto, Portugal, 1900. 167,955 Osaka, Japan, 1908. 1,228,580 Ottawa, Canada, 1911. 86,000 Oxford, England, 1910. 58,220 Palermo, Italy, 1911. 314,656	Timbuktu, 8udan. 2, Tokyo, Japan, 1908. 2, Toronto, Canada, 1911. 2, Trebizond, Turkey in Asia. 17reste, Austria-Hungary, 1910
Panama, Panama, 1909 .40,801 Para, Brazil .65,000 Paramaribo, Dutch Guiana, 1909 .84,795 Paris, France, 1911 2,846,986 Peking, Ohina .1,600,000	Tripoli, Tripoli, 1999. Trondhjem, Norway, 1910 Tunis, Tunis, 1906. Turin, Italy, 1911. Upernivik, Greenland
Pernambuco, Brazil, 1906. 150,000 Perth, West Australia, 1908. 54,854 Peterborough, Canada, 1901. 11,289 Pletermaritzburg, Natal, 1911. 80,589 Pirsus, Greece, 1907. 78,579	Valencia, Spain, 1910 Valparaiso, Chile, 1907 Vancouver, Canada, 1911 Venice, Italy, 1911
Pisa, Italy, 1911 .65,215 Port Arthur, Canada, 1901 .8,214 Port Arthur, China .00,000 Port au Prince, Haiti, 1908. .100,000 Port Said, Egypt, 1907 .49,884	Vera Cruz, Mexico, 1910. Versailles, France, 1911. Victoria, Canada, 1911. Vienna, Austria-Hungary, 1911. 2, Viadivostok, Siberia, 1909. Warsaw, Russia, 1909. Weilington, New Zealand, 1911.
Portsmouth, English 1910 217,999 Posen, Germany, 1910 156,696 Potsdam, Germany, 1910 62,224 Prague, Austria-Hungary, 1910 223,741 Pretoria, Transvaal, 1910 48,609	West Ham, England, 1910
Pretoria, Transvaal, 1910. 48,609 Puebla, Mexico, 1910. 101,214 Quebec, Canada, 1910. 78,000 Queenstown, Ireland. 9,083 Cuito, Ecnador, 1909. 70,000 Hangoon, Burma, 1911. 369,483	Wuchang, China

APPENDIX 481

ELEVATION OF SOME PLATEAUS AND MOUNTAIN PEAKS

		_	AUS AND MOUNTAIN PLANS		
Abyssinian Piateau	South America	Feet5-7,00022,86010,81217,82515,781	Mauna Los, Hawaiian Islands. Mayon, Luzon Island, Philippines. Mexican Plateau. Mitohell, Appalachian Mts., N.C. (highest Mt. Maroy, New York.	in Eastern U.	3.)6,711 5,844
Bolivian Piateau Brazilian Piateau Chimborazo, Andes, Ecuador Cotopaxi, Andes, Ecuador Elbruz, Caucasus, Russia	•••••	10-18,000 2-2,500 20,498 19,618	Mt. Tina, Haiti. Orizaba, Mexico (highest in Mexico) Pico del Turquino, Cuba. Pike's Peak, Rocky Mountains, Colorado. Popocatepeti, Mexico.		10,800 18,814 8,600 14,111 17,798
Etna, Sicily Everest, Himalayas, Nepal (highest know Fremont Peak, Rocky Mountains, Wyo. Fujiyama, Japan Hedia, Rociand.	• • • • • • • • • • • • • • • • • • •	13,790 12,865	Rainier, Cascade Mountains, Washington. St. Elias, Alaska San Francisco Mountain, Arizona Shasta, Cascade Mountains, California Tibet Plateau		18,025 12,794 14,380
Kunchinjungs. Kenis, Africs. Kenis, Africs. Kilimanjaro, Africs (highest known in A Kosciusko, Australis (highest in Australi Logan, Coast Ranges, Canada (highest kn McKinley, Alaska (highest known in Nor Mauna Kes, Hawalian Islands	frica)ia)nown in Canada	18,620 19,780 7,836)19,589 20,464	United States, Western Plateau Vesuvius, Italy. Washington, White Mountains, N.H. (i eastern U.S.). Whitney, Slerra Nevada, California (higher Yunque, Porto Rico	nighest in No	rth- 6,279
8	OME OF THI	E LARGEST	RIVERS OF THE WORLD		
Length i		Oecon	Length in	Basin Area	·
Forth America	Sq. Miles	Ocean	Miles Europe	8q. Miles	Ocean
Arkansas 2,170 Colorado 2,000 Columbia 1,400 Mackenzie 2,000	185,671 225,049 216,587 590,000	Atlantic Pacific Pacific Arctic	Seine. 482 Thames 228 Volga. 2,400	80,800 6,100 568,800	Atlantic Atlantic Caspian
Missouri 8,000	527,155	Atlantic	Amur2,800	590,000	Pacific
Missouri-Mississippi	1,257,000 432,000	A tlantic A tlantic	Brahmaputra. 1,800 Ganges. 1,500	425,000 440,000	Indian Indian
Ohio	201,720 240,000	Atlantic Atlantic	Hoang-ho	570,000	Pacific
St. Lawrence	580,000	Atlantic	Indus1,800	872,700	Indian
Yukon2,000	440,000	Pacific	Irawadi 1,500 Lena 2,800	158,000 950,000	Ind ian Arctic
South America			Mekong 2,800 Ob 3,200	280,000	Pacific Arctic
Amazon	2,500,000 866,000	Atlantic Atlantic	Yangtse-kiang	1,000,000 548,000	Pacific
Plata	1,200,000 200,000	Atlantic Atlantic	Yenisei	1,500,000	Arotic
Europe	200,000	24	Africa		
Danube	800,000	Atlantic	Congo. 2,900 Niger 2,600	1,200,000 568,800	Atlantic Atlantic
Dneiper	242,000 140,000	Atlantic Arctic	Nife	1,278,000	A tlantic
Elbe	55,000	Atlantic Atlantic	Zambezi1,500	600,000	Indlan
Rhine 800	27,000	Atlantic	Australia		T., 31
Rhone 500	75,000 8 8,000	Atlantic	Darling	270,000	Indian Indian
	SOME OF TH	HE LARGE	LAKES OF THE WORLD		
	***	Greatest	1	•11 /*	Greatest
Area in Sg. Miles	Elevation in Feet	Depth in Feet	Area in Sq. Miles	Elevation in Feet	Depth in Feet
Aral Sea26,900	160	225	Huron	582	750
Baikal	1,812 780	4,550 70	Ladoga	60 810	780
Caspian	- 85 ¹	2,400	Michigan	582	870
Chad, variable with season10,000 and often more	800-900	19	Nicaragua8,600	110	88
Dead Sea	- 1.810 ¹	1.880	Nyassa	1,500 247	600 + 788
Erie9,990	578	210	Superior	602	1,008
Great Bear Lake 11,200 Great Salt Lake 2,860	200 4,218	80-50	Tanganyika	2,800 12,875	2,100 700
	-	over 650	Victoria Nyanza80,000	4,000	590 +
•	el.		Winnipeg9,400	710	70
¹ Below sea leve					
•		TRIBUTION	OF MANKIND		
Great Slave Lake	DIS		OF MANKIND		. 779,000,000
1 Below sea leve	DIS	540,000,000 .880,000,000	Cancasians Europe	• • • • • • • • • • • • • • • • • • • •	355,000,000
¹ Below sea leve	DIS	540,000,000 .890,000,000 .55,000,000	Cancasians	• • • • • • • • • • • • • • • • • • • •	855,000,000 290,000,000

AREA, POPULATION, ETC.

DISTRIBUTION OF MANKIND

Ethiopians Africa and Madagascar North and South America		Brazil Colombia Peru Bolivia, Guatemala, and Venesuela	8.150.000
American Indians	22,170,000	United States Canada	
	RELIGIONS (OF MANKIND	•
Buddhists and Brahmins	440,000,000	Mohammedans	180,000,000 250,000,000
PRINCIPAL COUNTRIES FROM WHICH	THE FOREIGN-B	ORN POPULATION OF THE UNITED ST.	ATES HAS COME
Country of Birth	Number in 1910	Country of Birth	Number in 1910
Austria-Hungary Italy Russian Empire British North America England	215,587 186,792 56,555	German Empire. Ireland. Greece Sweden Bootland	

DISTRIBUTION OF NEGROES IN THE FIFTERN STATES WHERE THEY ARE MOST NUMEROUS

	States	Number of Negroes in 1900	Percentage of Negroes to Total Population, 1900	l	States	Number of Negroes in 1900	Percentage of Negroes to Total Population, 1900
1.	Georgia	1.084.818	46.69	9.	Tennessee	480,248	23.77
	Mississippi		58.50				27.97
	Alabama		45.24	ı		,	
	South Carolina		58.86	11.	Kentucky	284,706	18.25
	Virginia		85.68	12.	Maryland	235,064	19.75
		•		18.	Florida	280,780	48.65
6.	Louisiana	650,804	47.10	14.	Missouri	161,284	5.19
7.	North Carolina	624,469	82.97	15.	Pennsylvania		9.48
	Texas		20.36)	Total number of	l Negroes in 1900, 8,840,78	0.

INDEX AND PRONOUNCING VOCABULARY

KEY TO PRONUNCIATION

(WEBSTER'S INTERNATIONAL DICTIONARY)

\$\frac{\pi}{\pi}\$, as in \$\frac{\pi}{\pi}\$ is, in \$\frac{\pi}{\pi}\$ is, in \$\frac{\pi}{\pi}\$ is, in \$\frac{\pi}{\pi}\$ is, in \$\pi\$ is, in \$\pi\$

is to be found are indicated by heavier type.

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